

NAVAL POSTGRADUATE SCHOOL MONTEREY, CALIFORNIA



THESIS

**THE FUTURE OF THE CHILEAN SHIPBUILDING AND
DOCKING COMPANY - ASMAR: A STRATEGIC
MANAGEMENT MODEL ANALYSIS**

by

Heinz J. Pearce

December 1997

Principal Advisor:
Associate Advisor:

Nancy C. Roberts
Roger D. Evered

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Heinz J. Pearce
Captain, Chilean, Navy
B.S., Chilean Naval Engineering School, 1980

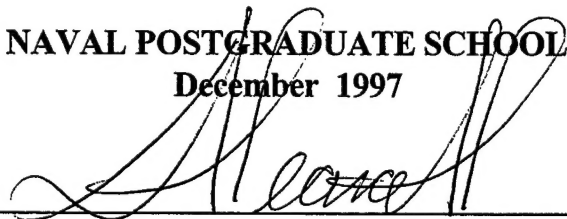
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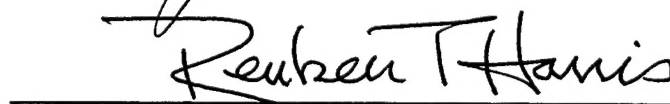
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December 1997**

Author:



Heinz J. Pearce

Approved by:


Nancy C. Roberts, Principal Advisor
Roger D. Evered, Associate Advisor
Reuben T. Harris, Chairman
Department of Systems Management

ABSTRACT

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I. INTRODUCTION

A. BACKGROUND

The reduction of a global threat after the fall of the Soviet Union has resulted in a condition where most developed countries have made substantial cuts in defense spending. This has affected the shipyards industry world wide because shipbuilding programs previously approved have been reduced or canceled. The result of these cancellations, coupled with the lack of a commercial shipbuilding market, has placed many navy and private shipyards in financial trouble. This downsizing has resulted in a reduction of maintenance requirements as well, and the corresponding loss of work for these shipyards. The Chilean Defense Industry is not immune to the world downsizing trends. The threat of possible downsizing is low, but it remains as a threat for the future. This threat is highlighted by the realities of the downsizing occurring in north hemispheric Naval Forces.

The Chilean Government is at the present developing a "Defense Policy" to establish and frame the entire defense industry of Chile. To date this policy has produced only specific laws and regulations for each entity separately.

This study examines the managerial evolution of some major Navy shipyards in the world as a way to capitalize their experiences in the light of the South American defense development trends and the future Chilean defense policy. The result of this research study will recommend the most appropriate management model for ASMAR to meet its future needs.

ASMAR-Shipbuilding and Docking Company is a state-owned shipyards managed by the Chilean Navy since 1895. Although the government formally created the company in 1960, the shipyards have served the Chilean Navy ships for more than a hundred years. The shipyards have grown as the Chilean Navy grew. The shipyards have attempted to maintain the state of the art in technology and to be self-sufficient to meet Chilean mobilization requirements. There are no other shipyards in the country with similar capacities in basic

repair capabilities or that can contribute to the readiness of the Chilean Navy. In Chile there exists only a few other small shipyards; these have only the capabilities to repair fishing vessels. This leads to the conclusion that ASMAR has a potential national security value and that the shipyards are required to ensure that the Chilean Navy ships can be maintained in a high degree of material readiness in peacetime and in time of conflict. These shipyards are necessary for the handling of activations, overhaul and repairing of battle-damaged naval and merchant ships. The capabilities ensure that the shipbuilding base is available to build combatants and cargo ships according to the national requirements.

B. OBJECTIVES

The objective of this study is to establish the most convenient strategic management model for the Shipbuilding and Docking Company-ASMAR in order to meet its needs and to satisfy the requirements of the Chilean Navy in the future.

C. RESEARCH QUESTION

The primary research question in this study is:

What would be the most appropriate management model for the Chilean Navy shipyard in the future given the changing environment of the navy shipyard industry in the world?

Before answering the primary question it is necessary to address the following supporting questions:

What are Chile's shipyard capabilities at present?

What are the present management models used in other Navy shipyards in the world?

In the light of the existing management model used by some major navy or government-owned shipyards, could a change in the management model improve the management of the Chilean Navy shipyards?

What may be the effects of a change of the ASMAR management model in the Navy budget for maintenance, refits, conversion, and shipbuilding?

D. METHODOLOGY

This thesis will use published documents from some major shipyards, literature searches, first draft and remarks from the proposed Chilean Defense Policy, and documents of the ASMAR Shipyard. Additionally, the study will use some local interviews and oversea's interviews with Chilean Naval officers to add to the information obtained through published documents. Current events as described in *Shipyard Chronicle*, *Fairplay* Directory and Magazine, *Industrial Relations Journal*, and other maritime and business magazines, are used in the research. The published documents will provide background information on the different strategies applied to manage shipyards and the results of those experiences. An analysis of these sources will lead to the final recommendations.

E. ORGANIZATION OF THE STUDY

The study is organized to address the research question and the supporting questions. Chapter II establishes a conceptual framework about the National Interest and how the Shipyard Industry is related to the Maritime National Interests. Also this chapter defines five management models which are the common models applied in the shipyard industry around the world. Chapter III analyzes the United States Shipyard Industry and Chapter IV identifies the most common management model used by major Navy shipyards in Europe. Chapter V includes the South America Shipyard Industry of five countries.

Chapter VI analyzes the Chilean Shipyard Industry indicating the shipyard's capabilities and also the current management model used in ASMAR. Chapter VII identifies the defense industry trends in the South American region and makes some comments on defense policy of Chile. Chapter VIII analyzes the effects of different management models identified in the previous chapters on the Chilean Navy shipyard, and concludes indicating the most appropriate management model to operate the shipyard in the future.

Finally Chapter IX presents the summary of the study and offers some recommendations of the most appropriate management model that ASMAR should follow to meet its future needs.

F. LIMITATIONS AND ASSUMPTIONS OF THE STUDY

The defense industry is an extremely classified field. Information must be secured to protect national interests. The current study was developed using only open information available in magazines, papers, web-sites and through interviews. Additionally, only those shipyard industries deemed to be the most important were selected by the author. Thus, there is limited information about South American Defense and Shipyard Industry.

Although the shipyard industry may be divided into shipbuilding capabilities, ship repairs capabilities or both, throughout the study the shipyard industry was analyzed in general as the whole capability, as a way to maintain the general view of the industry. Only in some cases was it necessary to specify one of the two capabilities of the shipyard industry for a more accurate evaluation.

Each management model identified was the common pattern, which leaves open the possibility that new models could emerge in the future. The models were not analyzed on particular details, because every user has individual needs and constraints. Instead, they were analyzed in general terms.

The Defense Policy in Chile is under development, which means that the future publication could bring different affects on the ASMAR shipyard. The study was developed under the current norms that regulate the Chilean Defense Industries and the current national and logical development pattern. This pattern does not necessarily represent how Chilean Defense Industries would adapt to political, economic or external pressure in the future.

The study does not factor in changes in military security nor does it take into account other unpredictable changes. Only the current defense trends among the worldwide actors are considered.

II. NATIONAL INTEREST AND THE SHIPYARD INDUSTRY: A CONCEPTUAL FRAMEWORK

Some scholars define national interest as a concept of both political analysis and political action. As an analytic tool, this definition is employed to describe, explain, or evaluate the sources or the adequacy of a nation's foreign policy. As an instrument of political action, national interest serves as a means of justifying, denouncing, or proposing policies. Both refer to what is best for a national society. [Ref. 1, p. 34]

Other scholars define national interest as the perceived needs and desires of one sovereign state in relation to the sovereign states comprising its external environment. This definition talks about the state's needs as the result of a political process in which the country's leaders ultimately arrive at a decision about the importance of a given event to the country's well-being. This definition also implies that the interests of the nation-state in its entirety are not the interests of private groups, or the political organizations within the state. [Ref. 2, p. 3]

A. BASIC NATIONAL INTERESTS

The simple definition as given above does not help to clearly identify the national interests. Nuechterlein provides additional definitions for leaders and planners as a guide to help them in policy formulation: [Ref. 2, p. 4]

- **Defense Interests:** These interests are defined as the protection of the nation-state and its citizens against the threat of external physical violence or against an externally inspired threat to its system of government.
- **Economic Interests:** These interests are defined as those affecting the enhancement of the nation-state's economic well-being in relation to other states or international system.
- **World Order Interests:** These interests are related to the maintenance or preservation of the political and economic system within the international

environment and the assurance to its citizens and the nation-state of operating peacefully outside its borders.

- **Ideological Interests:** These interests are related to the preservation and protection of a set of values that the citizens of a nation-state share and believe to be universally good.

It is necessary to clarify the order in which these interests appear does not suggest any priority of one interest over another, and also that the four basic interests are not mutually exclusive. On the contrary, interests may be complementary in most of the cases.

B. INTENSITIES OF INTEREST

In order to analyze the differing degrees of interest a government believes it may have in international events, Nuechterlein combines the Basic National Interests with a category of intensity using the following definitions:

- **Survival Issues:** are interests that are at the level where “the very existence of a Nation-State is in jeopardy.”
- **Vital Issues:** are interests that are at the level where “serious harm will very likely result to the State unless strong measures, including the use of conventional military forces, are employed to counter an adverse action by another state or to deter it from undertaking a serious provocation.” The main factor that differs survival from vital on this scale is the time available to seek alliances or to negotiate or take aggressive countermeasures by political, economic or military means.
- **Major Issues:** are interests that are at the level where “a state’s political, economic and ideological well-being may be adversely affected by events and trends in the international environment and thus requires corrective action in order to prevent them from becoming serious threats (vital issues).” Most issues in international relations fall into this category and usually are resolved through diplomatic negotiations.
- **Peripheral Issues:** are interests that are at the level where “a state’s well-being is not adversely affected by events or trends abroad, but where the interests of private citizens and companies operating in other countries might be endangered.”

One of the state needs contained in the National Interest of a country is the Maritime National Interest. This factor becomes more relevant if the state is a coastal country. This National Interest then belongs to the list of interests in the country's well-being.

C. MARITIME NATIONAL INTEREST

Following the schema presented by Nuechterlein, (including the fact that, under the United Nations Convention on the Law of the Sea (UNCLOS III), coastal countries have sovereign rights up to the 200 nautical miles from the coast-line and that the sea may be considered as an integral part of the Nation-State) it is possible to identify analogies for the Maritime National Interest. These analogies are shown in Table 1. [Ref. 2, p. 11]

Table 1. Analogies Between Maritime and National Interests

Defense of Homeland	Defense of the Ocean Spaces
Economic Well-being	Ocean Economy (Resources)
Favorable World Order	Favorable Ocean Order
Ideological	Maritime Awareness

The following are definitions:

- **Defense of the Ocean Spaces:** the defense of the Nation-State's ocean interest against threat and violation of the Economic Exclusive Zone (EEZ), contiguous zone and territorial sea.
- **Ocean Economy:** the contribution that the ocean resources can give to the enhancement of the Nation-State's economic well-being.
- **Favorable Ocean Order:** the maintenance of an international sea policy in which nation-state may feel secure to develop its maritime activities and at the same time should ensure the existence of the sea sovereignty of the nation for the coming generations.
- **Maritime Awareness:** the consciousness of the value of the maritime activities, which should include the protection and the furtherance of a set of policies to consider the sea and ocean spaces as a real space for the development and growth of the nation.

The degree in which the Maritime Interest is threatened determines the intensity of the interest. This threat could be internal or external in origin. According to the strategic value of the particular maritime interest which is under threat, it is possible to determine the intensity of interest.

A nation-state will always seek to maintain its existence as an entity. To do so, there are two basic requirements: Territorial Integrity and Political Independence. Consequently, the nation should have the ability to influence events, which is defined as "Power." [Ref. 3, p. 7] Territorial integrity, under UNCLOS III, and political independence. These may be taken as the core interests of a state.

D. MARITIME POWER

According to the above definition of power, "Maritime Power" can be described as the ability and capacity to influence maritime objectives of a Nation-State. Some scholars focus their work on maritime power according to the components of that power.

1. J.R. Hill

The following are components of maritime power presented by Hill on his book *Maritime Strategy for Medium Powers*: [Ref. 3, p. 30]

a. Trade and Access

Trade and Access is the possession by a state of a flourishing seaborne trade, and access to routes and markets. This is a very important element in economic power. [Ref. 3, p. 30]

b. Shipbuilding Industry

A national shipbuilding industry in the past was regarded as an essential component of maritime power. The capacity to produce, more or less independently, the operational units of both economic and military power at sea is generally considered a major financial asset in peace and a strategic necessity in war. [Ref. 3, p. 33]

c. *Exploitation of Natural Resources*

Exploitable resources are generally divided into living and non-living, and sometimes into renewable and non-renewable resources. Both living and non-living resources may, in certain cases, enormously add to a state's economic power. But the other kinds of power impinge upon economic power. First, exploitation often depends on an advanced technological base. Second, the ownership of certain resources may become a matter of dispute between states and other forms of power, legal and diplomatic. Finally, the protection and preservation of resources and the agencies that exploit those resources entails some constabulary function. The ultimate demonstration of that function must be military power. [Ref. 3, p. 34]

d. *Military Power at Sea*

The existence of military power at sea is a fact of history and of present-day reality. However, safeguarding offshore resources and those who exploit them is in essence a direct and uncomplicated business. However, this business can be expensive and intricate in practice. Protection, generally involves a subtle intermingling of military power with many other components. But maritime power may be provided for purposes other than safeguarding trade and resources. These purposes are in the broadest sense political and generally involve the maintenance or enhancement of the state's position in the world. [Ref. 3, p. 35]

Figure 1 presents the schema developed by Hill for Maritime Power. It shows the four determined factors which influence the Maritime Power of a Nation.

2. *Geoffrey Till*

Another view is that of G. Till in his book, *Maritime Strategy and the Nuclear Age*. Till developed his definition of Maritime Power by looking at the components of sea power. These components are divided into two major groups: sources and elements. Till outlines the sources of maritime power as: the maritime community, national resources, styles of government, geography and geopolitics issues. These sources are followed by the elements of the sea power: merchant shipping, maritime bases, and the fighting instrument.

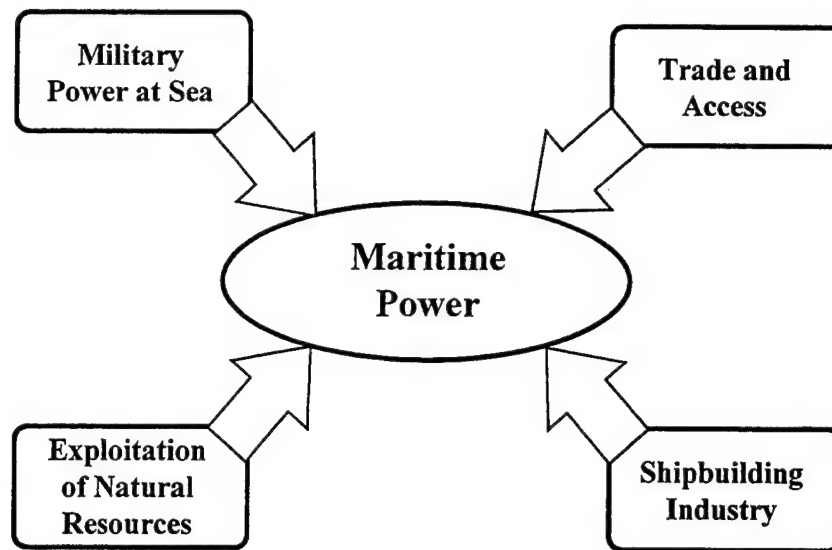


Figure 1. Hill - Schema for Maritime Power

Within national resources, Till includes the shipbuilding capacity of a nation. He considers that:

...industrial expertise and shipbuilding skills are major factors in the number and quality of warships, obviously a key ingredient in naval success. [Ref. 4, p. 77]

Figure 2 shows Geoffrey Till's Model of Maritime Power.

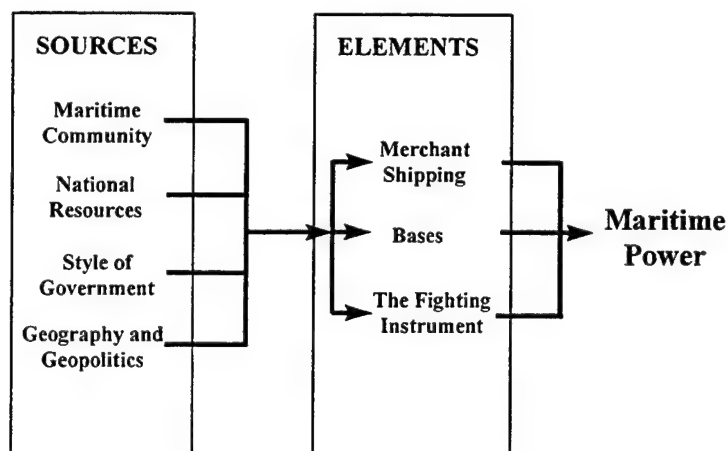


Figure 2. Geoffrey Till's Model of Maritime Power

E. IS THE SHIPYARD INDUSTRY PART OF THE NATIONAL INTERESTS OF A COUNTRY?

From the theories developed above, it is obvious that the Shipyard Industry is an important factor and plays an important role within the National Interests of a Nation State. Using the Maritime Power Model from J.R. Hill, Figure 3 shows the place that the shipbuilding industry can take within the "National Strategy" of a Nation. The shipbuilding industry as a national interest, belongs primarily to the Governments as the policy maker, and at a second level, to the Navy as the user with concerns for the maintenance of the warships.

The shipyard industry is a matter of national interest and national security. The highest authority of a nation has the responsibility to act in favor of the interests of the state. The Department or Ministry of Defense has as one of its principal responsibilities the mobilization planning and preparedness of the state's assets. The shipyard industry is one of the important elements of a nation's war planning and execution. It follows that any decision that a government makes about its shipyard industry is within the political-strategic level.

F. MANAGEMENT MODEL OPTIONS

As it was indicated above, the type of management model for the shipyard industry is a strategic decision of the government, where it must choose among the different management possibilities to meet its political-strategic needs. The most common strategic options for a management model for a Shipyard are as follows:

1. Government Owned and Managed

In this model, the government is the owner of the shipyard. The government manages the yard itself or by contracting management through private industry. The shipyard may belong to the organizational structure of the Department or Ministry of Defense, or another government agency or institution. This Ministry has total responsibility

NATIONAL STRATEGY

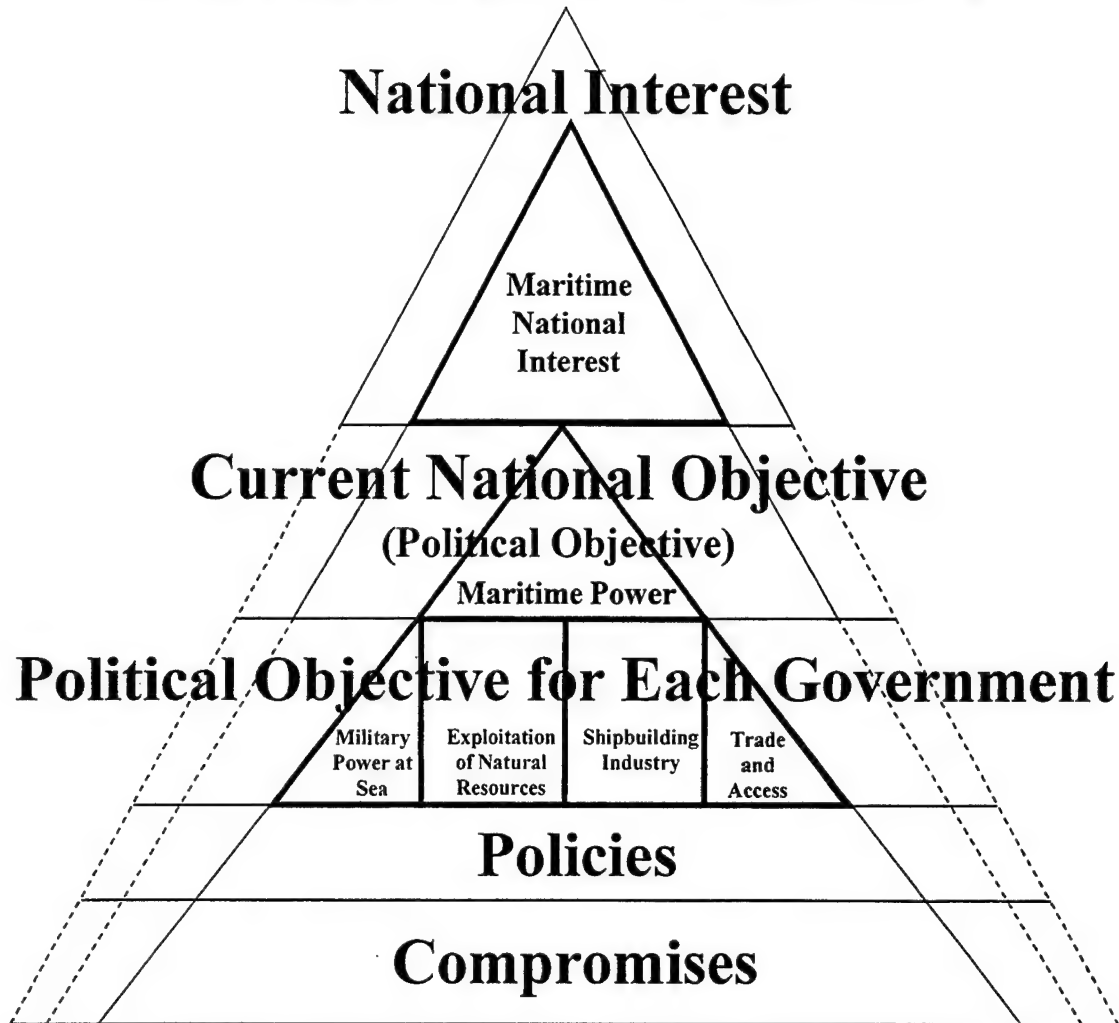


Figure 3. Shipbuilding Industry Within the National Strategy

for the shipyard. The shipyard is operated with the resources budgeted by the government. This budget represents a fiscal financial load to the government.

2. Navy Owned and Managed

In this model, the shipyard is an asset of the Navy. Consequently, the responsibility for the management and operation of the shipyard belongs to the Navy. The yard is managed with the resources that the Navy has been assigned for this operation. Most of the navies who use this model give the installation the name of "Arsenal."

3. Privately Owned and Managed

In this model, the shipyard is managed by private parties and is totally a private responsibility.

4. Government-Owned, Contractor-Operated (GOCO)

In this model, the government owns the facilities and land, but a private or commercial management organizes the work. A contract between the government and the private company who operates the shipyard is required.

5. Government-Owned, Navy-Managed

In this model, the government is the owner of the shipyard, but the responsibility are the Navy's for the management of the yard. However, the Director of the Shipyard is responsible to a government agency or ministry through the Commander in Chief of the Navy. The shipyard assets belong only to the shipyard, as a public entity. These assets are totally separated from those assets of the Navy.

The factors that influence the government's choice for management and dictate particular policies related to the shipyards industry are related to the current and future threats, economics, political and or social conditions, and other exogenous forces that influence the government to act toward certain pre-determined ways. However, the government must always consider that the shipyard industry is a strategic industry of the nation.

III. UNITED STATES SHIPYARD INDUSTRY

A. BACKGROUND

Throughout history, Naval and private shipyards have jointly served as the principal elements of the shipbuilding and ship repair base required by the U.S. Navy and by the country. However, through that time, the shipyards were not exempt from problems. In fact, one possible reason for the problems of the U.S. Shipyard industry is the collapse of the domestic maritime industry. This is a problem for the private shipyards, since few ships are being built to serve private maritime needs. Therefore, the private shipyards have come to depend on the Navy for almost all their work.

The U.S. Naval shipyards exist to support the Naval Fleet. Their activities are centered on repairs and alterations to Naval ships; this includes services to ships at sea and to Naval personnel. The result is the maintenance of a reservoir of capacity and skilled personnel to meet emergency demands.

The role of the private shipyards is more diverse, not because of what they do, but because of their customers. On the one hand, they compete for work from a variety of private customers. On the other hand, they serve government interest by working directly on government contracts (the Navy).

Since the late seventies and early eighties, the shipyard industry has shown a substantial reduction in commercial work. Figure 4 shows the downward slope of commercial shipbuilding, and Navy ships under contract or on order up to 1992. [Ref. 5, p. 14]

In 1984, a joint study published by the Navy-Maritime Administration Shipyard Mobilization Base (SYMBA) identified 119 shipyards in the United States that have potential of national security value. These shipyards have the capability to perform mobilization tasks such as building, dry docking, and topside repairs. Of the 119, nine were

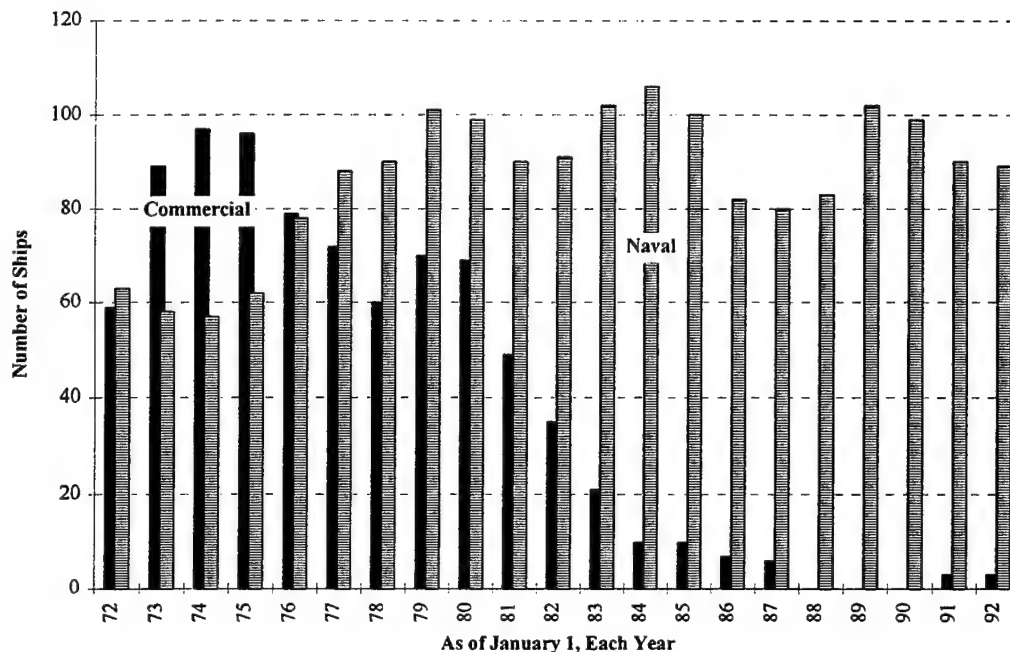


Figure 4. Downward Slope of Commercial Shipbuilding
Ref. [Shipbuilders Council of America]

Navy shipyards, while the remaining 110 were in the private sector [Ref. 6, p. 1]. The SYMBA study concludes that a shipyard mobilization base should:

1. Ensure that ships of the naval fleet can be maintained in a high degree of material readiness and are modernized with appropriate new equipment.
2. In peacetime, retain sufficient capability to maintain or increase the size of the naval ship fleet and to build and maintain merchant ships consistent with the objectives of the Merchant Marine Act of 1936, as amended.
3. In time of conflict, be capable of handling activation, overhaul, repair, and battle damage of Naval and merchant ships.
4. Ensure that the shipbuilding base provides the capability to build combatants and cargo ships to wartime requirements and to support the goal of a merchant marine that is suitable in time of war or national emergency. [Ref. 7, p. L-4]

Since that time, more than 50 of those private shipyards have closed their gates and more than 40,000 production workers have lost their jobs.

For a long time after the end of World War II, and only because of massive Government support, the United States remained a maritime leader and shipbuilding nation. High U.S. operating and building costs increasingly had to be offset by direct payments (construction and operating subsidies) and indirect support such as cargo reservation and cargo preference legislation. Between 1936 and 1983 construction differential subsidy payments to shipyards amounted to \$3.8 billion. No new construction subsidy funds have been authorized since 1981 [Ref. 6, p. 28]. Consequently, non-subsidized ship owners, avoided building U.S. flagged vessels, because of high operating and building costs. Figure 5 shows the trends of the shipyard industrial base in the early eighties to the present. This is based on work done by the Shipbuilders Council of America (SCA).

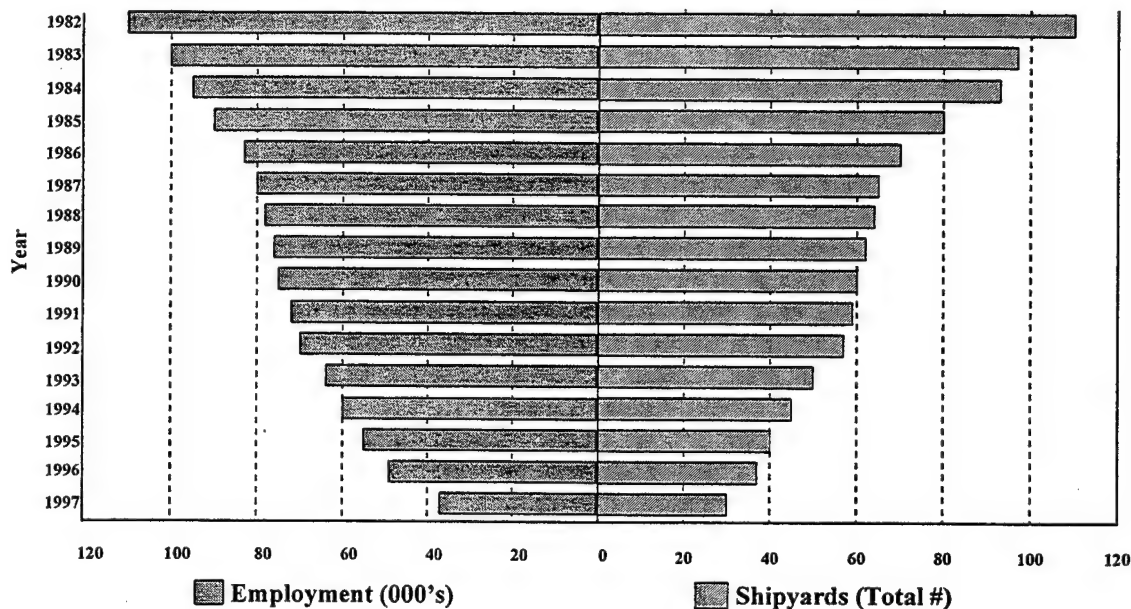


Figure 5. Trends of the Shipyard Industrial Base
Ref. [Shipbuilders Council of America]

Prior to 1993, the benchmark used for tracking the U.S. shipbuilding industry was the Active Shipbuilding Base (ASB). ASB was defined by shipyard capability and business criteria. In 1993, the ASB was replaced by a base defined primarily by shipbuilding

capability. This shipyard base, called the U.S. Major Shipbuilding Base (MSB), is defined as privately owned shipyards that are open, having at least one shipbuilding position capable of accommodating a vessel 122 meters in length or over. With few exceptions, these shipbuilding facilities are also major repair facilities with dry docking capability. Utilizing this definition, as of January 1, 1997, there were 17 major shipbuilding facilities in the United States (See Figure 6). [Ref. 8, p. 3]



Figure 6. U.S. Major Shipbuilding Base
 After Ref. [4, p.4]

B. UNITED STATES POLITICAL AND ECONOMIC TRENDS [Ref. 9, 10, 11]

Since 1980, the United States has experienced an important shift in its exports--away from traditional European markets toward Asia and Mexico. There are several reasons behind this development. First, the fast-growing economies in these regions have resulted in expanded markets for U.S. products. Second, the progress toward trade liberalization in many countries, best exemplified by the implementation of the North American Free Trade Agreement (NAFTA) in 1994, has reduced barriers toward U.S. products. And, finally, increasing amounts of U.S. and other foreign investment in these economies have produced rapid increases in trade of capital and intermediate goods.

The changing direction of U.S. exports toward rapidly emerging markets and the potential for export growth there are reflected in this section, which analyzes specific countries as current and future export markets. The underlying reason for this historic shift in trade patterns is the explosive economic growth in Asia over the past three decades. Long the world's leader in terms of population it is now the fastest growing economic region, creating significant markets for U.S. goods. At the same time, the participation of a growing number of Asian nations in world trade has given rise to a dynamic new class of competitors for U.S. exporters.

However, there are a number of rather convincing reasons which indicates that the United States is losing its competitive edge with respect to other countries. First the US lags behind other industrial countries in the rate of saving investment. Second, the US standard of living has not increased as rapidly as other countries. Third, the US is getting beat in the high-tech area. Fourth, the US has a lower rate of productivity growth in manufacturing than other countries have. Finally, the US has shown a relative decline industrially as measured against world manufacturing production of textiles, iron and steel, shipbuilding, and basic chemicals, and it is also losing its global share of automobiles, robotics, machine tools, and computers. [Ref. 9, p. 114]

While the Democratic and Republican parties, and all major political leaders support private enterprise, opinion is divided over the role of foreign investment and trade in the

economy. In the late 1980s and early 1990s, the Bush administration favored open markets for trade and investment at home and abroad and sought further foreign investment.

However, foreign ownership of US assets is occasionally a serious political issue. Labor often seeks government intervention to fight import penetration and job losses. Growing trade deficits and protectionism abroad have increased pressures for greater protectionism in the US.

The current US president, Bill Clinton has taken positions largely beneficial to business. The administration sided with big business regarding NAFTA, avoided extremes on environmental regulation, extended most-favored-nation (MFN) status to China, and granted full diplomatic recognition to Vietnam. Clinton's selection of a moderate and experienced economic team of top advisers reassured the business community and was applauded in financial markets.

State governments exercise extensive powers in the areas of land use, insurance, banking, environmental controls, hazardous waste disposal, labor relations, civil rights, taxation, and the issuance of corporate charters. Most large corporations direct their political activities toward state and local governments. State governments promote trade and investment, and most sponsor trade and investment missions. Some offer lucrative incentive packages to foreign investors. Many stimulus packages have improved since 1990, especially tax incentives.

Unions have become weak and ineffective since 1975, as workers' real wages have declined and as employers have moved aggressively to keep organized labor out of their plants. Although some union leaders plan to become more militant in the workplace and are prepared to use tactics of civil disobedience and confrontation. However, the global business environment is not particularly conducive to their goals or tactics; changing technology and intense competition from abroad will be working against them.

Foreign ownership is limited in aviation, maritime industries, defense, and communications. Under the Exxon-Florio amendment, the Treasury Department reviews

foreign takeovers of US companies, and the president has the authority to block acquisitions that threaten national security.

Although a few state governments maintain specific regulations, foreign investors are free to select their own managers and repatriate profits and capital without restriction. The US has no exchange controls.

Tariffs are generally low. The US and the major exporting nations have agreed on quotas for such sensitive imports as steel and automobiles; but there has been an increase in nontariff barriers, such as orderly marketing agreements with major producers. Business leaders anticipate big benefits from the 1993 agreements under GATT and NAFTA, including improved opportunities in Mexico and the creation of more jobs.

The US ranked as the world's most competitive nation in 1995 because of its aggressive program of deregulation, strength in innovative technologies, the adoption of new management techniques, and tight control over labor costs.

The enormous deficits in the federal budget and the current account deficit estimated at almost \$176 billion in 1995 -- have produced major changes in the country's international economic position. Since 1985, when US became the world's largest debtor nation, owing more than \$660 billion to the rest of the world. Much of this borrowing is needed to finance the budget deficit. More than 75% of the national budget consists of social programs, such as Social Security and Medicare, which severely inhibit efforts to reduce the deficit. Since maintaining the federal deficit consumes 75% of total net savings, the country suffers from low investment in business facilities and equipment.

One of the sources of redistribution and a way to reduce the budget deficit is been used is the Defense budget, which continue with a negative slop.

From an international point of view, the reduction in tariff and other trade barriers mandated by the agreements will largely benefit US exporters because foreign countries generally maintain higher tariffs than the US. The substantial decline of the US dollar will eventually spur export competitiveness.

Former President Bush opposition to protectionism kept both tariffs and other trade barriers low, despite increasing domestic pressure to institute reciprocal protectionism against countries limiting US exports. Trade policy has changed very little under the Clinton administration. Clinton, like Bush, faces strong pressure from interest groups to use US trade policy as a means of pursuing political, economic, and social goals. Activists are demanding quotas, tariffs, or sanctions against foreign countries whose practices do not meet US standards with regard to environmental policy or human rights. In principle, Clinton believes in free trade and has stood firm despite strong pressure. The NAFTA debate showed how strongly a bloc of labor unions, environmentalists, and consumer groups feared the removal of trade barriers. Many groups fear that the US is suffering under free trade.

In this environment, US trade initiatives in Asia and Latin America will be hard to sell in Congress. Even the long-promised NAFTA membership for Chile is increasingly unlikely. Nevertheless, Clinton intends to push for more open trade within the Asia-Pacific Economic Cooperation group and with Chile and other Latin American countries.

C. SHIPYARDS AND NATIONAL SECURITY

Most of the major legislation enacted over the last hundred years was for the purpose of protecting and supporting the U.S. Merchant Marine. Table 2 lists major enactment in support of the shipbuilding/ship repair industry since 1789. These enactment's show the sustained effort of the U.S. government to maintain this strategic industry. This industry has a high value from a national security point of view.

Even though the earlier maritime legislation during the nation's first years was primarily concerned with where a ship was built, and secondarily with vessel registry, at the current time legislation is mainly to support the Shipyard Mobilization Base (SYMBA). This is shown by the enactment of the President of the National Defense Authorization Act of 1994, containing the National Shipbuilding and Shipyard Conversion Act of 1993.

Table 2. Major Enactment in Support of Shipbuilding/Ship Repair Industry Since 1789
After Ref. [2, p. 33]

Legislation	Provision(s)
Acts of 4 July 1789, 20 July 1789, 1 September 1789, 30 July 1790	a. Discriminatory tonnage duties levied on non-U.S.-built vessels. b. Reserved U.S. coastwise trade to U.S.-built vessels.
An Act Concerning Navigation of the United States, 1 March 1817	a. Limited U.S. coastwise trade to U.S.-flag, U.S.-owned, and U.S.-built vessels.
Tariff Acts of 1890, 1894	a. Import duties on steel plate and iron removed for shipbuilders.
Panama Canal Act of 1912	a. Removed duties on all shipbuilding materials used to construct vessels for U.S. registry. The Simmons-Underwood bill of 1913 put all iron and steel on the free list.
Shipping Act of 1916	a. Legislative basis provided for establishing the Emergency Fleet Corporation. This government corporation would eventually build over 2,300 ships of all types, of approximately 14 million deadweight tons, at a cost of \$3 billion.
Tariff Act of 1930	a. Imposed a 50 percent ad valorem tax on nonemergency foreign repairs to U.S.-flag vessels.
Merchant Marine Act of 1920	a. Restated legislation that prohibits foreign-owned, -built, or -flag vessels in U.S. domestic trades. (Earlier prohibition was suspended on U.S. entry into World War I.) b. Section 30 of Act established policy of federal (preferred) mortgage guarantees for construction of vessels in U.S. shipyards. "A preferred mortgage shall constitute a lien upon the mortgaged vessel in the amount of the outstanding mortgage indebtedness secured by such vessel."
Acts of 27 July 1868, 1898, 1899	a. Alaska, Hawaii, Puerto Rico, and Guam trades reserved to American-built vessels.
Merchant Marine Act of 1936	a. Title V provided for government payments to shipyards to make up difference between U.S. and foreign costs in building ships for U.S. foreign trade.
Merchant Marine Act of 1936	a. Act mandated that U.S.-flag ships in foreign trade receiving an operating differential subsidy be built in U.S. shipyards. b. Allowed ship operator to deposit earnings and revenues from ship sales into a tax-deferred construction reserve account until expended for ship construction. c. Allowed a shipowner credit on obsolete vessel toward replacement construction in U.S. shipyards.
Act of 23 June 1938	a. Title XI "Federal Ship Mortgage Insurance" added to Merchant Marine Act of 1936. Replaced Ship Mortgage Act of 1920. In 1986 this title authorizes federal government to insure private loans used to finance construction/reconstruction of vessel in U.S. shipyards, including vessels in domestic trade and offshore drilling rigs, barges, and tugs.
Public Law 911, 6 January 1951	a. Provided funds to build for government thirty-five 13,400 DWT 20knot vessels. This became known as the "Mariner" program because each ship's name was followed by the word "Mariner" (e.g., Keystone Mariner).
Long Range Shipping Act of 1952	a. Construction differential subsidy option extended to all ships operating in U.S. foreign trade that are "suitable for national defense purposes in time of war or national emergency." b. Section 507 amended to allow domestic trade ship operator to trade in old ships for credit on new construction; established a construction reserve fund for this shipping.
Merchant Marine Act of 1970	a. Set goal of building 300 ships for U.S.-flag registry over next 10 years. Construction subsidies were to be primary financing mechanism. Goal was to reduce CDS to 35 percent. b. Extended construction assistance to bulk carriers, not necessarily suitable for national defense in time of war or national emergency.
Public Law 97-252, 8 September 1982	a. Established that no naval vessel or major component may be constructed in a foreign shipyard unless authorized by the president in the interest of national security.

This act expanded the existing Title XI Federal Ship Financing Program by authorizing the Secretary of Transportation to guarantee obligations issued to finance the construction, reconstruction or reconditioning of eligible export vessels. The act also authorized guarantees shipyard modernization and improvement. The Shipyard Act established a National Shipbuilding Initiative program to support the industrial base for national security objectives. Additionally, its goal is to help reestablish the American shipbuilding industry as an internationally competitive industry. [Ref. 8, p. 6]

From Table 3 it is possible to see that the Shipping Act of 1916 established the Emergency Fleet Corporation (EFC), whose primary purpose was to acquire, through building and other means, sufficient tonnage to meet America's vital shipping needs. Internal crises caused problems which delayed the programs; the largest shipyard built from the ground up was not completed until after Armistice of World War I. The key lesson learned for the future was that it is extremely difficult to build ships in a hurry without prior planning and facilities, particularly when the shipbuilding base is unprepared and lacking. [Ref. 6, p. 36]

The private shipbuilding industry has suffered in the last few years from a major recession. This is due to the collapse of the domestic maritime industry. This problem was created for the private shipyards because few ships are being built to serve private maritime needs. Therefore, the private shipyards have come to depend on the Navy for almost all their work.

Several indirect arrangements have been made over the years to aid the private U.S. shipyards industry. Table 4 summarizes the major legislative enactment.

The U.S. Government has taken the responsibility to ensure the adequate shipbuilding base on which to build during a crisis as a national security issue. The decline of the shipbuilding industry has not gone without congressional notice. Table 5 lists recent legislative initiatives in this regard.

Table 3. Legislation Indirectly Aiding U.S. Shipyards
After Ref. [2, p. 39]

Legislation	Legislative Provisions
Acts of 1792, 1813, 1818	a. Federal government provided a bounty for construction of fishing vessels. b. Subsidies granted to cod fishing fleet.
Act of 3 March 1845	a. Mail subsidies provided to selected shipping firms to encourage an American flag presence on certain routes. Ships were to be American-built. The subsidy was canceled in 1858.
Act of 23 December 1852	a. Foreign vessels wrecked on U.S. coasts could be admitted to U.S. registry if repairs (made in United States) were equal to three times the salvage value of the vessel. Act amended in 1894 to allow registry of foreign vessels wrecked anywhere on same conditions.
Act of 28 May 1865	a. Mail subsidies reinstated.
Act of 18 July 1866	a. Ship owners who transferred their vessels to foreign flag during Civil War could not re-register them under U.S. flag.
Ocean Mail Act of 1891	a. Comprehensive system of subsidized mail services authorized. Ships on these routes were to be U.S.-built.
Act of 28 April 1904 (Military Transportation Act)	a. Military cargo reserved to U.S. flag ships and, by definition, to U.S.-built vessels.
Merchant Marine Act of 1920	a. Section 11 established a construction loan fund of \$25 million. It was to be used to "aid in the construction of vessels of the best and most suitable types for U.S. foreign commerce." Funds were available to ship operator on favorable terms.
Merchant Marine Act of 1928	a. Construction loan fund increased to \$125 million. b. Mail subsidies made dependent on replacement (in U.S. shipyards) of obsolete vessels.
Merchant Marine Act of 1936	a. Vessel operator receiving an operating differential subsidy required to build ships in the United States.
Ship Sales Act of 1946	a. Surplus war-built ships sold to U.S. firms on a preferred basis and on favorable terms. Modification to peacetime configurations, repairs, and overhaul of these vessels done in U.S. yards. (See Tariff Act of 1930 and Merchant Marine Act of 1920, Table 1)
Cargo Preference Act of 1954	a. Fifty percent of government sponsored cargoes must move in U.S.-flag ships, if available. The act induced a demand for U.S.-built ships. Shipments under the Agricultural Trade and Development Act of 1954 were also included in above-described cargo-sharing arrangement.
Act of 7 July 1960	a. Government share of construction cost raised to 55 percent for a two-year period. Purpose was to encourage replacement of U.S.-flag tonnage in U.S. shipyards.
Act of 13 September 1961	a. Act of 7 July amended to include reconstruction of ships at 55 percent subsidy level.
Trans-Alaska Pipeline Act of 1973	a. Prohibited export of domestically produced crude oil unless the president certified that such would not imperil domestic supplies and was in national interest. Note that Section 27 of Merchant Marine Act of 1920 (Jones Act) restricts cargo movement between U.S. ports to U.S.-flag/built ships.
FY 1975 Defense Appropriations Authorization Act (Title VIII)	a. As a matter of national policy legislation required that "major combatant vessels for strike forces of the U. S. Navy be nuclear powered." Given the secrecy constraint on U.S. nuclear ship technology, the amendment effectively limited this work to U.S. yards.
Export Administration Act of 1979	a. Restricted the export of Alaska North Slope oil until 30 September 1983. Note: Congress granted two-year extension in 1983, i.e., until 1985.
Shipping Act of 1984	a. This legislation "deregulated" to a certain extent American-flag liner companies. To the extent these companies were better able to compete in international ocean shipping, U.S. shipyards indirectly benefited.
House-Joint Resolution 648 of Continuing Resolution Appropriations for FY 1985	a. Extended prohibition against Department of Defense purchasing any military vessel, not just naval vessels, from a foreign shipyard. (See Table 1, Public Law 97-252.)
An Act to Reauthorize the Export Administration Act of 1979 (Public Law 99-64, 12 July 1985)	a. Restricted the export of Alaska North Slope crude oil. Legislation required a review of the export restriction provisions of the act along with a review of other federal and state taxing and leasing policies.

Table 4. Legislative and Individual Proposals in Support U.S. Shipyards
After Ref. [2, p. 45]

Direct Support of Shipyards	
Maritime Redevelopment Bank Act	Establish a Maritime Redevelopment Bank to finance, cofinance, refinance maritime projects through loan guarantees. Loans to be secured by ship mortgage or other firm assets. Legislation would restructure Title XI of the Merchant Marine Act of 1936 and encourage series production of commercial vessels.
****	Various proposals made to increase the share of naval repair and alteration work awarded to private shipyards. Proposals range from mandating 40 to 50 percent of this work to private yards.
****	Investigate the possibility of having U.S. shipyards export diesel-electric submarines to allied naval forces. Report on feasibility of this option requested by Senate Armed Services Committee.
****	Allow American flag operators who build two ships in U.S. yards to build three ships in foreign yards. These foreign-built ships would be considered "U.S.-built" with respect to Title XI, operating differential subsidies, and cargo preference laws.
****	Fund a grant program to upgrade propulsion machinery of U.S.-flag vessels in U.S. yards. Requirement is that fuel savings be on the order of 25 percent and that engine rooms be automated.
****	Department of Defense to finance construction in U.S. shipyards of militarily useful vessels. Vessels built in series would be sold or chartered to U.S. citizens. A variant of this proposal would make funding a Department of Transportation responsibility.
****	Authorize \$250 million in construction subsidy monies. Allow construction differential subsidies to exceed 50 percent.
****	Authorize \$300 million in construction subsidies for FY 1986, raise permissible CDS payment to 60 percent, and increase Federal Ship Mortgage Guaranty from \$12 billion to \$15 billion.
Indirect Support of Shipyards	
Competitive Shipping and Shipbuilding Act	Would require that exporters and importers of dry cargo and liquid bulk commodities increase use of U.S.-built, U.S.-flag ships. Percent of this trade going to U.S. ships would begin at 5 percent and increase to 20 percent.
****	Extend capital construction fund (CCF) to include domestic trade vessels. CCF now only allows U.S. foreign-trade operators to deposit monies into tax-deferred accounts for purpose of ultimately constructing/reconstructing tonnage in U.S. shipyards.
****	Allow a tax credit, similar to present 10 percent investment tax credit, for work performed in U.S. shipyards when both labor and management reduce construction costs; e.g., if management reduces profits by 15 percent and labor reduces labor costs by 15 percent, then a full tax credit of 15 percent would be given. Estimated total savings in U.S. building costs is 30 percent.
Conference Report, House Joint Resolution 465, Continuing Resolution for FY 1986	Established "a revolving Mariner [type] Fund for the construction and lease of cargo vessels configured for the military sealift mission." Start-up money for the fund would come from \$852 million of unused naval appropriations. While the Conference Report set aside the \$852 million, it cannot be spent until further enabling legislation is passed by Congress.

From Ref. [6, pp. 33-46]

Table 5. Recent Legislative Initiatives

Direct Support of Shipyards	
National Defense Authorization Act of 1994.	It authorized the Secretary of Transportation to guarantee obligations issued to finance the construction, reconstruction, or reconditioning of eligible export vessels.
Maritime Security Act of 1996.	It established a Program to assure a U.S. fleet of commercial vessel during time of crisis.
Indirect Support of Shipyards	
June 1989, shipbuilders Council Of America file petition under Sec. 301 of Amended U.S. Trade Act of 1974	Petition to try to make the U.S. Government take action to end shipbuilding subsidies in Japan, South Korea, Germany and Norway.
Shipbuilding Trade Reform Act of 1992, (Gibbons Bill) Amendment of the Tariff Act of 1930.	It requires shipowners of subsidized foreign built vessels to pay a Tariff upon entry into U.S. ports.

From Ref. [6, pp. 33-46]

One of the most recent laws passed by the congress was the Maritime Security Act of 1996, signed by the President in October 1996. The Act established the Maritime Security Program to assure that the United States has a fleet of U.S.-flag commercial vessel needed to carry critical supplies during times of national emergencies or war. The program comprises a fleet of 47 cargo ships and also replaces the existing Operating Differential Subsidy (ODS) which, for most liner vessels, will expire in December 1997. These initiatives are part of the answer that the government should give to the nation as to meeting its responsibility to the national interest.

The new Maritime Security Program authorizes a \$ 1 billion, 10-year program with vessel payments capped at \$ 2.1 million per vessel per year. To be accepted into the Maritime Security Program means that the vessel operators must make the subsidized tonnage available to the Department of Defense in time of war or national emergency. This includes intermodal equipment, terminal facilities, communications and cargo tracking systems and management services. By relaying on the U.S.-flag fleet, the Department of Defense accrues no additional cost and gains, access to a total global, intermodal transportation network - a network that includes not only vessels but also logistics management services. [Ref. 8. p. 11]

With this new program, the shipbuilding industry was revitalized and experienced a dramatic upsurge in new orders over the past few years. This reverses the long downward

trend in new commercial ship construction that was evident in the late 1980s and early 1990s. Figure 7 shows the commercial shipbuilding order book history.

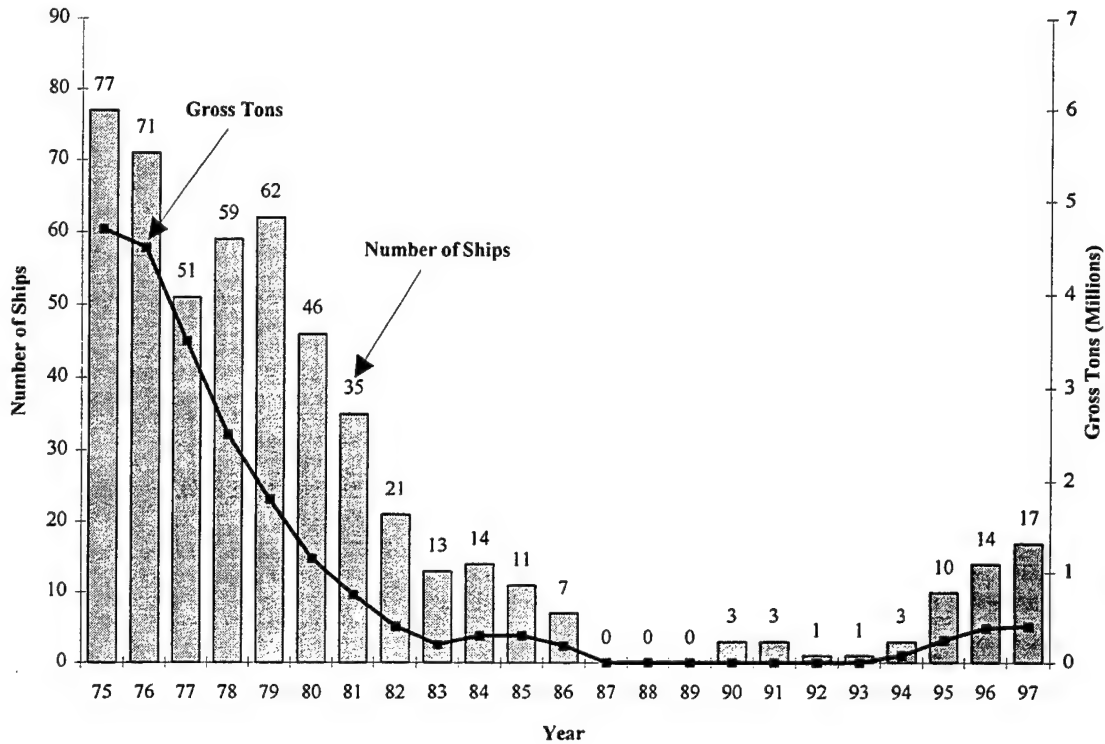


Figure 7. Commercial Shipbuilding Order Book History
After Ref. [4, p.13]

D. ORIGIN AND EVOLUTION OF THE NAVAL SHIPYARD COMPLEX¹

The Department of the Navy was established on April 30, 1798, an action which removed naval affairs from under jurisdiction of the War Department. The Secretary of the Navy was charged with direction of both the operating forces and the shore establishment. In the following year, 1799, the Congress authorized five Navy Yards to be located at Portsmouth, Boston, New York, Philadelphia, and Norfolk. The Mare Island and Puget Sound shipyards were authorized in 1852 and 1891, respectively. The last four Naval

¹ Data obtained on interview held at the Naval Sea Command 07.

shipyards were authorized in this century: Charleston in 1901, Pearl Harbor in 1908, San Francisco (Hunter Point) in 1939 and Long Beach in 1940.

From the earliest years, through World War I, the Naval shipyards were the principal logistics support element of the Navy shore establishment. They were developed to provide a range of services over and above those of a purely industrial nature. During the World War II expansion, additional shore activities were established to supplement the Naval shipyards' support functions. The result is that the Naval shipyards have remained the principal component of the port area complexes designed to provide the total range of support required by men and ships at sea.

Retrenchment actions following World War II resulted in some closure decisions. In 1990, the Congress established a new set of procedures for military base closures (Title XXIX of P.L. 101-510). These procedures were valid for only five years with closures being proposed every other year, 1991, 1993, and 1995. The closure of the Navy shipyard facilities as a result of recommendations by the Base Closure and Realignment Commission appointed by the President, has had an impact on both Navy and private shipyards. Table 6 shows the current Naval Shipyards Condition.

At the present time only four Navy Shipyard remains open. This represents a huge reduction in personnel over the years as showed in Figure 8.

Table 6. Naval Shipyards Condition
Ref. [Naval Sea Command]

Naval Shipyard	Open Resolution	Closure Completed
Portsmouth	1799	
Boston	1799	1974
New York	1799	1966
Philadelphia	1799	1996
Norfolk	1799	
Mare Island	1852	1996
Puget Sound	1891	
Charleston	1901	1996
Pearl Harbor	1908	
Hunter Point	1939	1974
Long Beach	1940	1997 (*)

(*) Long Beach Naval Shipyard was closed in 1950 only to be reopened in 1951 as the Korean conflict escalated.

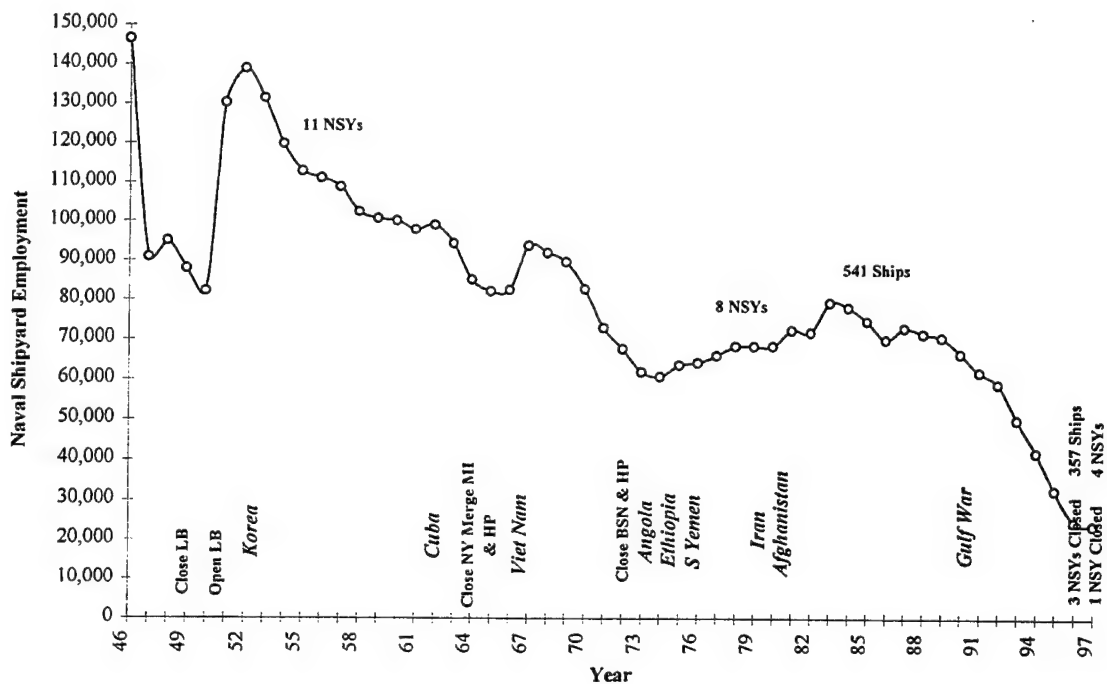


Figure 8. Naval Shipyard Employment
Ref. [Naval Sea Command]

E. U.S. NAVAL SHIPYARDS MANAGEMENT MODEL

1. Background

Based on the current terminology and models defined in Chapter II, it is possible to say that prior to 1892, the control of the Navy Yards was loosely distributed between various Bureaus and Offices of the Navy Department. The more significant actions since that date are:

- 1892 - The Assistant Secretary of the Navy was given supervision over the construction and repair of ships and over the wages of civilian employees at the yards.
- 1911 - A Director of Navy Yards in the Office of the Secretary was appointed to exercise very wide management control over the yards and to centralize in large

measure the control of activities of the Bureaus and Offices with respect to the yards.

- 1915 - The position of Director of Navy Yards was abolished and, subsequently, a small section under CNO was established to coordinate the Navy Yards from a top management viewpoint. The CNO, established in 1915, was given responsibility under the Secretary for operation of the Fleet and for preparation of naval war plans.
- 1921 - A Navy Yard Division was set up under the Assistant Secretary. The responsibilities assigned to this Division were very comprehensive. However, between 1921 and 1940, the functions of this Division were narrowed progressively to the point where civilian personnel matters and labor relations were its chief concern. In 1934, the Navy Yard Division was renamed Shore Establishments Division and given civilian personnel responsibilities for all shore activities.
- 1940 - The combination of the Bureaus of Engineering and Construction and Repair into a single Bureau of Ships, and the merger of the Construction Corps with the line set the stage for the control of Navy Yards by a single Bureau.
- 1943 - The upkeep and operation of Industrial Departments (planning, production, public works) at all Navy Yards was vested in the Bureau of Ships.
- March 1945 - The Under Secretary was delegated responsibility for the supervision and direction of all matters of administration and personnel for the Department of the Navy.
- September 1945 - Based on experience acquired during World War II, the Secretary directed the reorganization of the Navy Yards and the establishment of Naval Bases. The most salient features of this change were:
 1. Definitions and application of four components of control, namely: command, coordination control, management control and technical control.
 2. Placing the Naval Shipyards under the command and coordination control of District Commandants and Naval Base Commanders.
 3. Placing the Naval Shipyards under the management control of the Bureau of Ships and the Technical control of the appropriate Bureaus and Offices.

4. Assuring that the Naval Shipyards Commander had control of the functions essential to production including personnel, supply, accounting, and industrial medicine which formerly had reported to the Navy Yard Commandant but only on an additional duty basis to the Industrial Department manager.

The actions taken by the Secretary continued and reinforced the bi-linear system of organization whereby the Secretary's office maintained direct control of business administration matters under the purview of the technical bureaus while CNO established requirements and, through command and coordination channels, integrated the Fleet support actions of the field activities.

In 1963, the Chief of Naval Material, whose office was established by the National Security Act of 1947, was given command of the four material bureau, BuShips, BuWeaps, BuDocks and BuSandA. The Chief of Naval Material reported directly to the Secretary of the Navy with coordination and direction of requirements coming from the Chief of Naval Operations.

In 1966, the Bureaus were disestablished and six Systems Commands were established under the Chief of Naval Material. Importantly, the Chief of Naval Material was ordered to report to the Chief of Naval Operations. This change marked the end of the bi-linear system of organization in the Navy, thus eliminating the dual channels of communication previously available to the Secretary. Currently, COMNAVSHIPS (now NAVSEA) was given command of Naval shipyards and commenced reporting in all respects to the Chief of Naval Material.

2. Navy Owned Managed Model

Today, the Naval Shipyards operate under the command and primary support of the Command, Naval Sea Systems Command. The shipyard commanders report additionally to assigned area coordinators who have area coordination responsibilities for assuring that adequate support is provided to the Operating Forces of the Navy, to shore activities and to personnel of the Naval service. The Naval shipyards are provided material and technical support by commands, bureaus and offices. Commanders in the chain of command are kept

advised of such support actions. When readiness may be affected or operational or significant management considerations are involved, such support actions are taken through appropriate echelons of command. The Organization of the Naval Sea Command is shown on Figure 9.

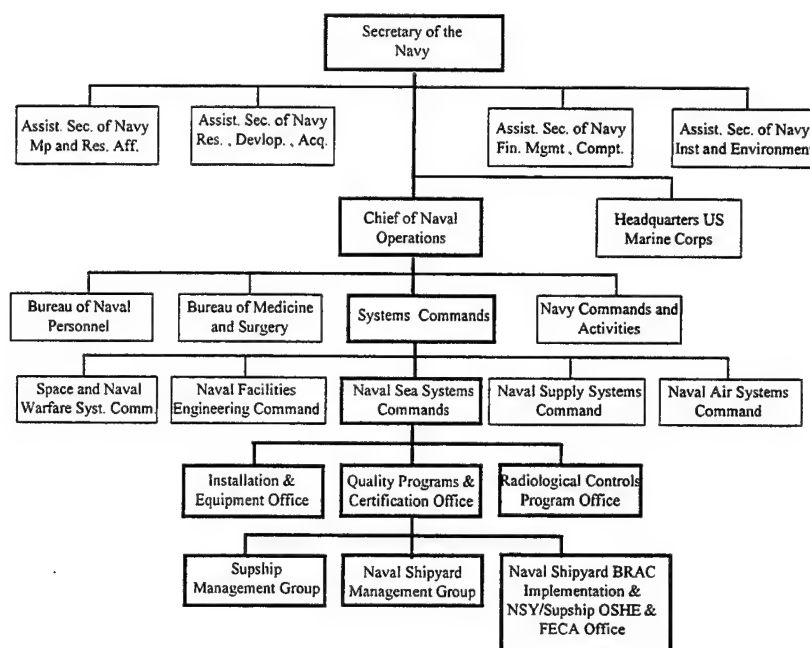


Figure 9. Organization of the Naval Sea Command
From Ref. [6]

The model used by the U.S. Navy Shipyard complex is based on the Navy Owned and Managed Model where the structure belongs to the Navy. The budget to operate the shipyards is given by the Navy. This means that the shipyard budget is part of the Navy's total budget. The Fleet Command purchases the man-days of work at a predetermined rate for the jobs developed on the ships.

In summary, the U.S. Shipyard industry is well defined and divided into Privately Owned Managed Model Shipyards and Navy Owned Managed Model Shipyards.

During the public debate held in 1988, due to the probable closure of Long Beach Naval Shipyard, the Federal Employees Metal Trades Council, Long Beach--AFL-CIO stated:

Hunters Point in San Francisco has been closed for thirteen years. Recently a large dry-dock was reactivated, incurring a significant expense to the Navy, showing that a shipyard can seriously deteriorate once it is shut down, and that it is very expensive to open it back up again. No evidence exists that a contractor can come in and run a Naval Shipyard any better than the Navy. In fact, it has been proven that the Navy can run their yards much more efficiently. There exists no evidence of any cost advantage to the government in converting a Naval shipyard to GOCO (Government-Owned, Contractor-Operated) status. [Ref. 12]

F. NAVAL VERSUS PRIVATE SPLIT OF U.S. NAVAL SHIP'S REPAIR WORK

Currently the Navy shipyards have low competence in ship repair works compared to the private shipyards. Commercial maintenance and repair work has become increasingly important to the health of the U.S. shipyards as the Navy performs smaller but more frequent maintenance and repair work on their ships. Large and small U.S. shipyards have been turning to commercial ship repair work as a result of the continuing decline in the Navy's new construction activities and the slow growth of new commercial shipbuilding orders to replace the world's aging merchant fleet. [Ref. 8, p. 23]

Each year the Navy accomplishes maintenance and modernization work on its ships in both the Navy and private shipyards. In FY 1996, the Navy completed 118 availabilities (overhaul/repair work) with a budgeted value of \$2.2 billion. Of these, 32 were accomplished in the Naval shipyards for a budgeted value of \$1.4 billion (61 percent) while the private sector completed 86 smaller, less complex availabilities reflecting approximately \$0.9 billion (39 percent) in budget value.

Prior to 1985, Navy repair work was either allocated directly to Navy shipyards or awarded to private yards. The bulk of ship repair work is still distributed on an allocation basis.

On the other hand, the Chief of Naval Operations specifies strategic and operational requirements to assure continued support in the event of emergency, crisis or war. These strategies are translated by the Naval Sea Systems Command into system capabilities

assignments compatible with each shipyard's responsibilities. Subsequently, facilities improvements, personnel training and related actions have been directed towards further development of these special capabilities in sufficient capacity to fully support the assigned warfare systems.

Naval shipyards exist to provide immediately responsive ship repair support to the currently operating combatant fleet, and to be the nucleus from which necessary wartime shipbuilding and repair capability can be mobilized. Naval shipyards work closely with local naval base commanders and other area naval commands to provide the crew support, administrative, and security functions required by ships assigned to a naval yard for overhaul or repair.

One of the major functions of the private shipbuilding and ship repair industry is to be available to serve the needs of the United States in time of national emergency. On the other hand, Naval shipyards are parts of the operational Navy, and are expected to be as immediately responsive to emergency requirements as commands afloat.

The government strategic decision of distributing the naval ship repair jobs between Naval and private shipyards through the promulgation of an Appropriation Act has a substantial strategic impact on the work of Naval shipyards. Naval shipyards can be placed into two categories:

- Those that affect the assignment of shipwork.
- Those that affect the self-sufficiency of the Naval shipyard complex.

1. The Assignment of Shipwork

Since the FY 1966 program, all Naval shipbuilding work has been assigned to the private sector, as is required by the Vinson-Trammell Act. On the other hand, historically the work policy for ship conversion, alteration and repair work assignments distributes it between the naval and private shipyards. The Department of Defense Appropriation Act, 1963, contained the following provision:

SEC. 541. Of the funds available in this Act for repair, alteration, and conversion of Naval vessels, at least 35 per centum shall be available for such repair, alteration, and conversion in privately owned shipyards: Provided, that if determined by the Secretary of Defense to be consistent with the public interest based on urgency of requirement to have such vessels repaired, altered, or converted as required above, such work may be done in Navy or private shipyards as he may direct. [Ref. 8, p. 23]

At the present, around 40% of Naval conversion, alteration, and repair work is assigned to the private shipyards. In the past, Naval shipyards overhauled the more complex Navy surface ships, such as cruisers, carriers, destroyers and frigates while those of lesser complexity, such as amphibious, auxiliary and support ships were overhauled in private shipyards. Nuclear submarine overhaul and conversion work is now distributed among Naval shipyards and one private shipyard. Because the complexity of surface ships is steadily increasing as new ships are entering the Fleets, the private shipyards are being tasked to overhaul more complex surface warships now than previously.

Currently, the official mission statement, applicable to all naval shipyards, is:

To provide logistic support for assigned ships and service craft; to perform authorized work in connection with construction, conversion, overhaul, repair, alteration, dry docking and outfitting of ships and craft, as assigned; to perform manufacturing, research, development, and test work, as assigned; and to provide services and material to other activities and units as directed by competent authority. [Ref. 6, p. 75]

U. S. Navy Shipyards may work for private shipowners only under the special authorization of the Secretary of Defense. The government installation is not allowed to compete with private shipyards, moreover there is normally plenty of capacity in the private yards. Consequently, the instances that the U.S. Navy Shipyards work for private shipyards are extremely rare and the situation must be very special to gain this authorization. It is not part of the normal development of work for the shipyards.

2. The Self-sufficiency of the Naval Shipyard Complex

From their earliest years, the Naval shipyards were developed as fully integrated industrial activities. Virtually everything required to build or overhaul a ship was

manufactured from raw materials at the shipyard site. However, the technological evolution and the specialization of the industry, induced the shipyards to purchase parts, pieces and equipment from the specialists. Additionally, the reduction in some shops whose job could be contracted outside, has had the consequence of recognition of the basic shops that should be retained to provide direct support to the ships. Finally, the government policy decision to withhold shipbuilding assignment from Naval shipyards, has resulted in the loss of staff related to this activity. Naval shipyards are now capable of only meeting ship conversion, alteration and repair requirements.

G. THE U.S. SHIPYARD INDUSTRY STRATEGIC MANAGEMENT

Besides the management model, and in the case of the U.S. shipbuilding industry the only consideration was the closure of Navy shipyards and the share of the repair load to the private sector, the U.S. government participates actively and has a positive control over the shipyard industry. This reflects the fact that at a high level, the government considers this industry to be important in the preservation of the national interests.

The Navy's long term fleet expansion program, which commenced in the 1980s, had a goal of a modern 600 ship fleet. This fleet expansion program was halted as a consequence of the end of the Cold War. Reductions in the Navy ship procurement program along with scheduled and early de-commissioning of Navy submarines, combatants and auxiliary vessels, has led to a smaller active U.S. Navy fleet. The Navy's active fleet shrank between the end of FY 1985 and FY 1996 from 541 ships to 357 ships. This reduction of 184 ships represents a 34 percent decline in the size of the Navy's active fleet. [Ref. 8, p. 37]

The U.S. Navy's shipbuilding plan for FY 1997-2003 includes the construction and conversion of 59 new ships costing about \$53.8 billion. The Navy's shipbuilding program represents a 70 percent reduction in the quantity of ships being procured, an average of 5.7 ships per year compared to the average of 19 ships annually for the Navy programs during

the 1980s. The new orders are dispersed among 7 private shipyards whose location is shown in Figure 10.

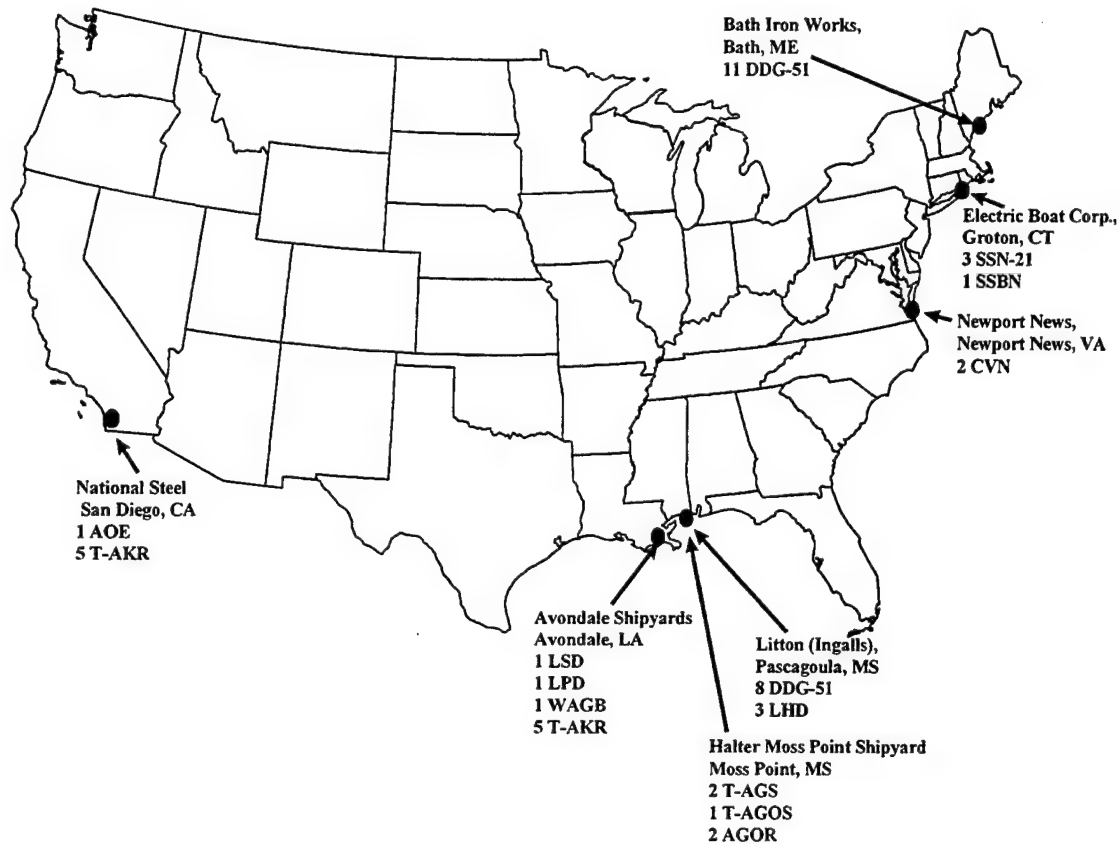


Figure 10. Private Shipyards Receiving New Orders
After Ref. [4, p. 21]

The major full service shipyards, those that comprise the Major Shipbuilding Base (MSB), will continue to depend on Navy shipbuilding and repair work as their source of employment for the rest of the decade.

Since mid-1992, the major shipyards have experienced a sharp decrease in employment, a consequence of deep reductions in new Navy shipbuilding orders. The decline in complex Navy repair activity and the absence of significant orders for commercial shipbuilding, forebodes a continued decline in shipyard employment through the end of 1998. The shipbuilding industry workload projection (Figure 11) reflects the

manpower requirements for the commercial shipbuilding order book as of December 1996, and the proposed Navy FY 1997-2003 shipbuilding plan.

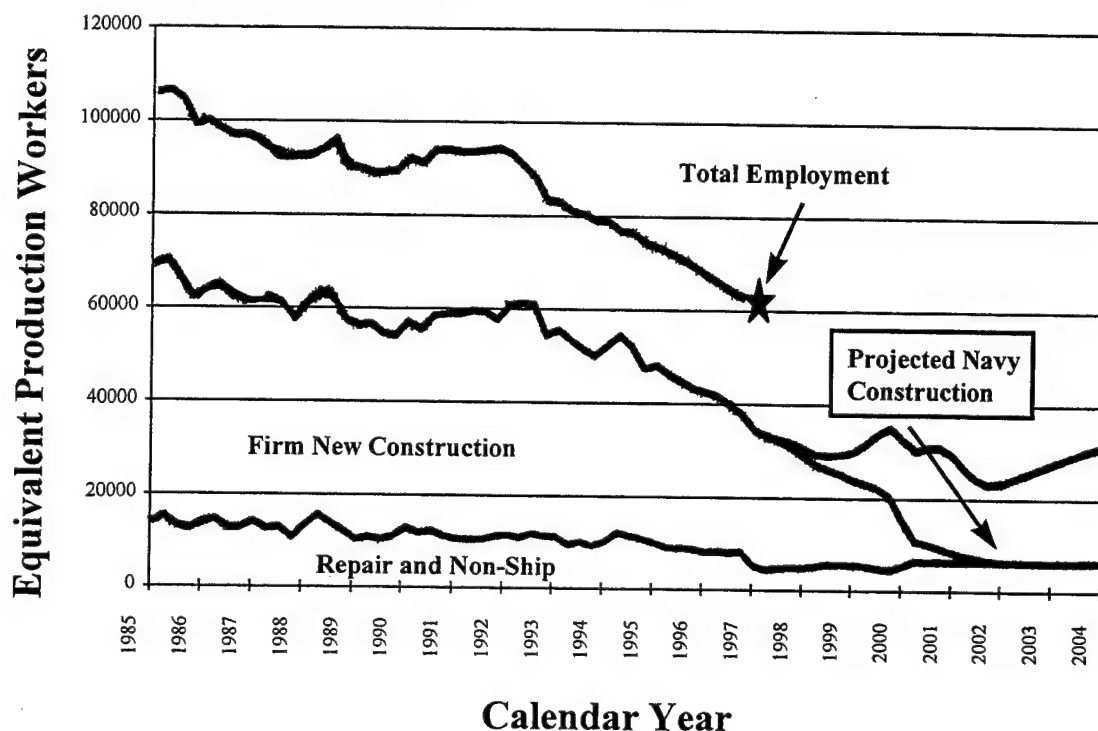


Figure 11. Shipbuilding Industry Workload Projection
After Ref. [4, p.40]

Foreign demand for naval vessels, and worldwide demand for replacement tonnage in the world tanker fleet for the coming years, are the major issues for the U.S. shipyards. This is to replace, with foreign market new constructions, to the reduction in Navy spending for shipbuilding and repair.

Finally, it seems that the National Shipbuilding Act of 1993 and the expanded Title XI Federal Ship Financing Program have been masterpieces in stimulating competition in the domestic and international commercial shipbuilding market. Navy new ship construction, which has been the predominant business for the U.S. shipbuilding industry, continues to employ a dominant share of the industry's resources, but the declining need for large numbers of new military ships is forcing U.S. shipyards to explore new avenues of commercial work in order to remain viable.

H. CONCLUSION

Historically, the U.S. shipyard industry was fueled with Navy work. In fact this work has increased as the U.S. maritime industry went into crisis during the past ten years. Consequently, the private shipyard industry has become more dependent on the U.S. Navy support through sharing the work with the private sectors. These actions were directly and indirectly imposed by government legislation.

The Shipyard Mobilization Base is essential to the national security of the United States. The majority of the U.S. shipyard work is currently coming from the U.S. Navy construction, overhaul, and repair programs. Even though the naval work is the cement of the U.S. shipyard industry, it is not enough to maintain a national shipyard capacity, adequate during times of national emergencies, crisis or war.

The U.S. government took the strategic decision of reducing over time the number of Navy owned shipyards. This was done to benefit the private owned shipyards and as a way to share the Navy ship repair load with the private sector. This also minimized the maritime industry crisis as well. The U.S. Navy was indirectly forced to close the Navy shipyards as a consequence of the Defense Budget cut.

The management model adopted by all U.S. Naval shipyards is the Navy owned and Managed Model, where the shipyard is part of the organizational structure of the Navy.

Naval shipyards have a long history of providing responsive fleet support where and when it has been needed. Mobilizations required in war time demonstrates the need for rapid expansion of ship repair capabilities. Additionally, the complexity of modern naval combatants requires that a ready base of technologically trained and experienced shipyard personnel be maintained for the existing or an expanding fleet.

The U.S. Government has taken responsibility for the correct management of the Maritime Sector in order to avoid a deep crisis in the shipbuilding industry and to ensure that there is a sufficient shipbuilding base on which to build in time of war or national emergency. The effort has been made through numerous pieces of legislation designed to affect the shipbuilding and ship repair industry. This fact indicates the U.S. government has

taken the responsibility for this resource and the will to protect and preserve the shipyard industry in the interests of national security.

IV. THE EUROPEAN SHIPYARD INDUSTRY

A. BACKGROUND

Beginning in the 1960s, western European shipbuilding ceded their domination of world shipbuilding, first to Japan, and then to other newly industrialized countries, for example, South Korea and more recently China and other eastern new independent states. These shipbuilding industries were shored up through the 1970s with state support. In the last 15 years, European shipbuilding has been in a full-scale retreat from an intensely competitive world market. For example, labor's nationalization in 1977 in the U.K. was intended to provide British shipbuilding with a decent burial. The purpose of privatization was to ruthlessly expose the industry to global competition in newly industrialized countries. These nations had underwritten shipbuilding as a critical driver to economic modernization. Central to privatization was the government's strategic decision to introduce commercial disciplines into the defense procurement process. Also, the intent was to share work with the private shipyard industry in most of the traditional high industrialized countries. The shipyards that survived were in a dangerous situation among a substantially decreased maritime industry. In the presence of this situation, governments generally started to take political and economical measures that included privatization, closure, changes in management styles and models among the Navy and government owned shipyards.

Until 1990, the entire combined defense industry of western Europe was concentrated against the Armed Forces of the USSR. All defense systems were designed to counter known technology of the USSR. But, with the fall of the Iron Curtain, the collapse of Warsaw Pact, and NATO firmly focused on the east, these nations have no visible enemy. This fact brought about dramatically reduced defense spending. This new world order has had a significant strategic impact on the shipyard industry. For the naval shipyard industry, the difficulties of over capacity have been magnified by a reduction in demand.

Additionally, the eastern shipyards have begun offering prices (though not necessarily quality) that is difficult to refuse.

All the industry, and particularly shipyard industries, were heavily subsidized in Eastern Europe. With the collapse of the centralized system, the subsidies ceased and the consequently collapse of the industries themselves became imminent. The West was then faced with the dilemma that if it did not subsidize the new emergent countries, certainly at the beginning, then it would be faced by complete political and economic disintegration along its borders. The west is now inadvertently subsidizing the east European shipyards whilst under the EEC law it cannot subsidize its own.

On the other hand, the reduction of the merchant marine in some countries, the high competition in shipbuilding by Japan, Korea and recently China, and the decrease of repair and maintenance requirement for private and naval shipyards, put this industry into a crisis in survival mode. It seems that the solution could be the creation of consortiums to confront the future. For example, those of electronic and aerospace industry. Figure 12 shows some current joint ventures or cross-share holdings in the European Defense industry. This is the first step in the process to consolidate an integrated defense structure. The shipyard industry has a long way to go in the future to achieve an integrated European Shipyard Industry.

B. UNITED KINGDOM NAVY SHIPYARDS

1. United Kingdom Political and Economic Trends [Ref. 9, 10, 11]

The UK has long provided a secure economic and political environment for private enterprise, regardless of the party in power. All parties support foreign investment and the government actively seeks multinational investors, offering incentives for certain kinds of capital investment.

Despite its ideological past and the preferences of some of its members, even past Labour governments have done little to hurt business interests. In the 1992 electoral campaign, Labour presented an economic platform similar to the policies advocated by the

European defense contractors have established numerous joint ventures or cross-share holdings that are not tied to particular programs. These are the first steps in a process that eventually could lead to a much more tightly integrated European defense structure.



DEFENSE NEWSLamoni W. Harvey

Conservatives. Past Labour governments rarely nationalized industries for reasons other than to save jobs or to fulfill strategic needs. Trade unions generally favor foreign investment, although they occasionally criticize multinational companies for decisions that could reduce employment. In any event, the Labour Party has decisively moved toward the political center, in large measure for the purpose of reducing business concerns. Marking the official beginning of what party leader Tony Blair has dubbed "New Labour," the party has approved an amendment to its constitution supporting a thriving private sector in a dynamic market economy. Partly as a result of policies consistently favoring business, the UK has been successful in attracting foreign investment.

Under former Prime Minister Margaret Thatcher, the Conservatives achieved a substantial restructuring of the British economy, and her successor government remains deeply committed to the principle that private ownership results in a more efficient allocation of resources. Many public enterprises have been privatized, and remaining government enterprises have been made more efficient and profitable.

While government spending still comprises an estimated 39% of GDP, it is down from its peak of 47% in the early 1980s. Cutting back further on the welfare state will be difficult to achieve, as will implementation of plans to increase the efficiency of the tax-supported National Health Service. Such efforts are opposed not only by Labour, but also by many conservatives.

Productivity levels are close to those of other EU countries and Japan. The trade union movement has weakened and become divided; membership has been declining, particularly in the private sector, and has currently dwindled to 40% of the total work force. The domestic economy showed a real growth in GDP around 2% in 1996 and will average about 2.5% per year through 2001.

Current Labor Party leader Tony Blair will move from the consensus he has built within his party to forge closer relations with the European continent and implement moderate policies regarding the economy, which will avoid recession, but will exhibit only sluggish growth. Favorable policies toward international business will continue.

Economic differences between the UK and other EU members, such as its need to import most foodstuffs and raw materials, have led to tensions within the EU. The UK has also expressed more reservations than any other member about the establishment of the EU's single market and planned monetary union. The Conservatives Party is divided in opinions and positions related to the EU norms.

Labour Party leader Tony Blair is a strong supporter of a federal Europe. He has spoken much more favorably of Britain's participation in the EMU, closer cooperation with the continental EU members on foreign and security policy, and a more powerful European Parliament. Nevertheless, the parliamentary Labour Party also contains a large minority of members who are skeptical of such closer relations.

The legacy of the British Empire continues to affect the UK's relations with its current possessions and former colonies. The countries belonging to the Commonwealth of Nations, a loose network of trading preferences linking the UK with its former colonies, are the sources of most raw materials and foodstuffs. One residue of the empire, Hong Kong, reverted from British to Chinese control in 1997.

The UK's authority over Gibraltar led to disputes with Spain, delaying its entry into the EU. During 1985, the border between Spain and Gibraltar was opened, and Spain entered the EU in January 1986.

The UK's control over the Falkland Islands led to warfare with Argentina in 1982. Tensions with Argentina have eased considerably, especially since the accession of Carlos Menem as Argentina's President. The two countries have engaged in continuing negotiations to resolve the questions of territory and fishing rights that still plague the areas surrounding the Falklands. Northern Ireland has long been a source of tension between Britain and the Republic of Ireland.

The UK serves as a base for many multinational corporations, and its own interests are spread throughout the world. Consequently, restrictions on foreign investment are extremely low, and no conceivable regime will change this environment. Labour will introduce no new restrictions on international business. Labour Party leaders are

pragmatists who are sympathetic to international business because it helps economic growth and provides jobs. Moreover, the Labour government will be especially eager to demonstrate its credentials as a party favorable to business and to avoid charges of socialistic economic management catering to unions. The party has worked hard to shed its image of harboring hostility to business and its partiality for excessive spending. Labour politicians have vowed, nonetheless, to impose windfall taxes on excess profits of privatized utilities, to undo the effects of some privatizations, such as the rail services, and to disallow corporate takeovers deemed contrary to the public interest.

The issue of the UK's participation in a single European currency during the next phase of EU integration will be a difficult one for any government. One reason is that the Labour Party contains a large minority of members who are skeptical about closer association with the continental members of the EU. The Conservative Party not only opposes restrictions on international investment but also encourages foreign investment in all but the most strategic industries. Its privatization strategy has provided opportunities for foreign investors. Supporters of the government and moderates agree that the government must continue to encourage foreign investment.

2. United Kingdom Shipyard Industry

The shipbuilding industry in the U.K. has undergone very significant changes over the last thirty years through the markedly different industrial policies of the two main political parties. Under the Socialist Government, all shipyards capable of producing vessels over 500 gross registered tons were nationalized to form one company, the British Shipbuilders. Under the Conservatives the industry was returned to private enterprise. By that time the U.K. was a member of the EC, and the privatization program was complicated by this membership. This issue shows the exercises of different political objectives of the Government that was shown in Chapter II Figure 3.

Europe at that time was still rigidly divided between East and West, but within the western European countries there was very substantial over capacity. Most yards were either owned by their respective Government or supported by large subsidies. It was

therefore obvious that the release of a number of yards, free of all Government controls, on to the European market, would only add to the pressures of over capacity. In an attempt to limit the pressures, the British Government took the strategic decision that each U.K. yard, at the time of privatization, had to nominate itself as either a warship yard or a merchant shipyard. There was no subsequent opportunity to change the nomination. Those major yards which chose the warship nomination were:

1. Vosper Thornycroft - large patrol vessel, minehunter
2. VSEL - nuclear submarines-large surface vessels
3. Yarrow (GEC) - medium size surface ships
4. Cammell Laird (VSEL) - conventional submarines, surface vessels
5. Swan Hunter- medium to large surface vessels

Those major yards which chose the commercial nomination were:

1. Kvaerner Govanin Norwegian ownership
2. Harland and Wolf- specializes in cruise liners and Royal Fleet Auxiliaries (RFA) which are classed as merchant vessels.

In addition to the above shipyards, Naval Shipyards at Devonport, Portsmouth, and Rosyth were responsible for the construction and maintenance of the Royal Navy Ships. However, a significant downsizing in defense expenditure and consequently a downturn in defense building over recent years has resulted in the bankruptcies of Cammell Laird and Swan Hunter.

3. United Kingdom Naval Shipyards Management Model

Until 1986, the UK Naval shipyards were managed under the Navy Owned and Managed Model, however under the "Dockyard Services Act 1986," two of the Royal shipyards, Devonport and Rosyth, started on April 6, 1987, to be run under private management. The British Government took the strategic resolution to change the Navy Shipyards management to the "GOCO" model or Government Owned, Contractor

Organized Model. The DOD objectives in introducing commercial management were to achieve greater efficiency, maximum competition and better overall value for money. The GOCO model was applied to the two Royal Dockyards from 1987 through 1997. There was an initial seven year term contract with Devonport Management Limited at Devonport, and Babcock Thorn Limited at Rosyth, to provide commercial managers for the Government owned Dockyards and assets. Additionally, the contracts guaranteed a core program of work. This core program is a highly beneficial arrangement for the management companies. These companies expected that early in the next century all work will become unallocated, therefore requiring the shipyards to compete for contracts against other commercial operations. Thorn Limited was responsible for carrying out ship refitting work, awarded to them by DOD, at an acceptable standard of quality. This was required to be in accordance with contract terms and conditions for price and delivery. Both shipyards are resources from the projects they undertake from the Navy.

Over 60% of the work is placed in both yards from the "core program." This was established in the outset of privatization to ensure a smooth transition to the new regime, and as an initial step to full commercial ownership. Such an arrangement was required to make the terms of contracts commercially acceptable. Another 20% of Naval work is put up to competition, while around 15% is allocated to the Portsmouth. The Portsmouth Naval Shipyards with Navy Owned Managed Model has become a "Fleet Operating and Maintenance Organization" rather than a shipyard as it was in the past [Ref. 14, p. 1]. Before the management changes, Portsmouth was a refitting based enterprise. In this respect it must be understood that the shipyard must bid for its own funding and carries out such work that it can within the constraints of its budget.

Moreover, with the introduction of the GOCO model, DOD established a new customer organization under the Director General Ship Refitting (DGSR), who reports to the Chief of Fleet Support. DGSR's prime responsibilities is to plan the Royal Navy's ship repair/refitting program, place and manage contracts with the shipyards and other ship repairers, and plan the DOD's assets to the Shipyards.

a. Government Owned, Contractor Operated Model experiences

The management of the private operations in Devonport and Rosyth are not without problems. First of all the Navy's decision to reduce the refitting program, delays of refits due to budgetary pressures, services requirements delays, all induced significant delays and increases in cost over the estimates based on initial contracts for these refits. Additionally, a material supply problem resulted from the commercial manager's inability to order material in advance and also the result of the Navy Supply Organization's inability to reserve all items. Moreover, during the running of the contract, DOD receives the recommendation of the Committee of Public Accounts to move to full risk pricing² on all contracts as a way to increase efficiency by both sides. The National Audit Office noted that while workloads were expected to increase to employ the labor retained for the future, similar forecast increases had often not materialized in the past.

The GOCO Model's aim was to keep their full-time work forces at the minimum level to meet planned workloads (particularly, to retain skills in areas of advanced technology) and to use casual labor and subcontractors to the maximum extent practicable. However, uncertainties in the program make it difficult to assess the right level of labor required. Only during two years (1989-90, and 1990-91) did DOD separately fund the commercial managers (£25 million to Devonport and £37.5 million to Rosyth) for labor attributable to under-utilization concept, in order to avoid this cost in the refits cost as overhead. [Ref. 14, p. 12]

Another significant fact was the lack of experience shown by the GOCO model managers in pricing complex warship refit specifications. Poor specifications contributed to the difficulty of contract negotiations, excessive growth work, delays and cost increases. This problem created discrepancies in the quality of the specification of the refits and work in general. This was because the private standard of specifications were inadequate, but on the other hand, the Navy stated that their policy was to set out what work

² Risk pricing involves the contractor in quoting a firm or fixed price, or in accepting an element of risk in return for incentives to increase profit by reducing costs.

was required and not how it was to be undertaken. However, a major difficulty in managing a refit project is controlling “growth work,” which normally exceeded the DOD’s expectations, and was a factor in cost and/or time overruns. In addition to the above, DOD charged a license fee to:

- Ensure that the private managers’ commercial work is not subsidized;
- Provide a return to the Department for the use of their assets;
- Provide the commercial managers with an incentive to use the assets efficiently.

The license fee is included as an overhead in hourly rates and therefore charged against refit work. This license fee was another factor of disagreement because the private managers considered that the fees were too high to compete.

Even though, the GOCO model had undertaken specific cost reduction exercises and had introduced efficiency measures, reflected in improvements based on previous navy shipyards information, DOD was unable to assess the net savings actually achieved. [Ref. 14, p. 5]

b. Experiences of the Total United Kingdom Navy Shipyards Privatization

In the meantime, the Navy resolved its problem with the application of GOCO management model in Devonport and Rosyth shipyards. Other ex-Navy shipyards, which were completely privatized by the government, tried to survive these problems. An example, was the Yarrows Shipyard. It faced a major strike in the winter 1993, which was symptomatic of impact of privatization upon industrial relations in British shipbuilding.

Yarrows was a Naval shipyard operating on the Navy Owned and Managed Model. It was changed to a Privately Owned Managed Model. After the change, the profitability under the privately owned model did not show that management was determined to lower production costs through a restructuring of the labor process.

Historically, the British state has used a limited number of defense contractors with preferred source status. Defense procurement was based on tight specifications for bidders, the extensive use of cost-plus pricing regime which resulted in extremely low productivity levels by international standards.

From 1983 the British administration transformed the internal organization of the Ministry of Defense in terms of its technical assessment capability, project management competence, and management information systems. The internal restructuring of state procurement agencies was paralleled by the rapid rise of competitive tendering for defense contracts (by value), that were priced by competitive bidding. Likewise, the state's relentless commercialization of defense industry has been paralleled by extensive corporate restructuring. British Aerospace and GEC are the twin cornerstones not only of the defense sector but of British manufacturing as a whole. Corporate reorganization has transformed both companies in "financial control" corporations. In both companies, corporate headquarters exercise tight control over the financial performance of their constituent companies. These companies enjoy considerable operational autonomy.

Yarrows' experience within GEC has exemplified critical trends in industrial relations since 1979. Structurally, industrial relations has shifted from multi-employer agreements to corporate regulation to firm-specific forms of labor regulation. Yarrow was also embroiled into the social history of work and shop floor trade unionism. Yarrows' Joint Shop Stewards' Committee (JSSC) was in the 60s by far the most powerful craft group. This culture was not easily transformed after the organizational changes with the privatization. The piecemeal privatization of British Shipyards triggered a fundamental restructuring of collective bargaining in the industry. National bargaining no longer regulated wages and work organization.

The GEC take-over was the prelude to significant changes in the labor strategy and management style in the British Shipyards. For experienced shipyard managers, Yarrows rejected their traditional soft approach in favor of an aggressively interventionist management style in 1985.

Traditionally, shipyard industry relations was about keeping the peace, maintaining the status quo. After the take-over there was a decision that the talking had to stop. It was action which was needed if the yard was to achieve a step change in efficiency. [Ref. 15, p. 300]

Beside Yarrows Shipyards, other shipyards within this privatization movement suffered similar labor problems as a bi-product of the structural reorganization required by the new private owners.

c. Current Management Model on British Shipyards

DOD has left the GOCO management model for the shipyards and sold Rosyth in 1996 to Babcock International. This operation resulted in Rosyth changing to a Privately Owned Managed Model.

On February 11, 1997, the UK Ministry of Defense reached an agreement on the privatization of Devonport Royal Dockyard with Devonport Management Ltd. (DML). Consequently Devonport also changed to a Privately Owned Managed Model. This was the UK's largest submarine and warship refitting facility. The sale was formally completed in early March 1997 when new licenses and norms for the operation of the business came into force. The transaction involved the transfer of future liabilities associated with the operation of the business, in addition to the sale of physical dockyard assets. Devonport will become the UK's sole refitting and refueling facility for nuclear-powered submarines early in the next century. It incorporates major surface ship support facilities, including a large three dock covered refitting complex [Ref. 16]. However, the British government will have some problems in the near future, because of its decision to concentrate all nuclear refitting and refueling at a single site. This fact is already under discussion.

The only repair organization that remains under the British Navy operation and management within the Navy Owned model is now in the bidding process. With this change in the near future of the management and operation of the Portsmouth Fleet Maintenance and Repair Organization (Portsmouth Dockyard), and the Royal Naval Armament Depot at Plymouth, the British Navy will leave almost all its maintenance, refit

and repair centers in third party hands. The economical effect from this decision should be analyzed in the near future by the British Government, in order to determine if these changes really represent a reduction in the government's budget for repair and maintenance cost of the British Navy ships. However, this researcher was not able to ascertain if the British Government included some clause in the selling contract of the two Shipyards that would preserve the interest of the nation. The author assumes that United Kingdom, as a recognized world maritime power should be taking adequate measures to maintain its historical maritime tradition.

C. GERMAN NAVY SHIPYARDS

1. German Political and Economic Trends [Ref. 9, 10, 11]

Germany's economic system entails considerable state involvement and regulation. Sectors with significant government participation include energy, transportation, communications, and manufacturing. During 1991-1995 government spending amounted to about 37% of GDP. Much government involvement is designed to help business. Taxes are high by international standards, but tax policy does not discriminate between domestic and foreign business. The top corporate tax rate is 50%.

All major parties and interest groups, except the former East German Communist Party, now renamed the Party of Democratic Socialism, and a small radical faction of the Greens, generally accept the mixed-market system containing a heavy proportion of capitalism, which the Germans call a social-market economy. It combines free enterprise with active social welfare programs. West Germany's postwar economic recovery and prosperity is a source of pride and served as a magnet and a model for East Germans during Germany's 45-year division. This favorable attitude toward private enterprise extends to international business, which in spite of the problems cited above, has generally found the Federal Republic an attractive site.

Trade unions share the favorable attitude toward business. Although about 47% of workers are unionized, labor's paramount concerns are wages, working conditions, and job

security, rather than fundamental change. The strike rate is one of the lowest in the industrialized world. The high labor costs are moderating as trade unions acknowledge that the country could be pricing its products out of the world market. In 1995, both labor and management showed increasing recognition of this competitiveness problem.

Germany is a highly organized and regulated society. Although its large state bureaucracy can be both a help and a hindrance, most government efforts are aimed at enhancing business activity. The high quality of the labor market is largely the result of the state system of vocational education, which business encourages. Businesses have easy access to the state bureaucracy and are often consulted before major business laws or regulations are drafted. The government supports reduced restrictions on trade, an approach which it advocates in helping make the EU's tariff policies.

Business conditions will remain fluid as the transition to a fully-integrated German economy continues. The modernization of the East German economy will create uncertainty about inflation, maintain high real interest rates, and put upward pressure on tax rates. However, in the long run the expansion of West German companies into East Germany and the rest of East Europe will create substantial opportunities for investment. Unification should stimulate economic growth. The reunification of Germany has posed no problem to the interests of international business and has opened new opportunities.

The postwar German economy has been marked by prosperity and retains many basic strengths, but came under serious pressure during the early 1990s because of reunification and latent structural problems. Fueled by increased exports and a boom in construction, the 1994 economy began to recover from the 1992-1993 recession. In the former East Germany the economy grew by 8.5% in 1994, the strongest growth rate of any region in Europe, reflecting optimism that most reunification problems were over. However, the recovery slowed during 1995 and practically stalled by early 1996. A decline in exports, drop in investments for new plants and equipment, and a slowdown in construction are responsible for the sluggish economic performance. It is expected that the average annual growth rate through 2001 to about 2.5%.

A major, but controversial, phase of the unification process was completed in 1994. The Trusteeship Authority (Treuhand), charged with the privatization of formerly state-owned property in the east, announced that it had sold most of the 14,000 enterprises it took over in 1990. Before privatization the state-owned firms had employed 4.1 million East Germans.

But while prospects have improved for eastern Germany, sluggish growth reflects overall serious structural rigidities that are plaguing the economy. Longer-term factors revolve around Germany's competitive position in the world economy. Paying the highest wage rates among industrialized countries, many German firms are moving jobs overseas to US.

Several structural conditions also hinder economic growth and discourage foreign investment. Labor laws and regulations make it difficult to discharge employees, irrespective of the employer's financial situation. As a result, many firms, even in periods of expansion, increase overtime or hire temporary workers rather than employ permanent employees. Subsidies to declining industries such as coal, shipbuilding, and agriculture hinder growth by reducing the availability of funds to other industries. Finally, trade union opposition and rigid government regulations impede the growth of the service sectors.

A core group of countries within the EU proceed more quickly toward full economic and political unity than other members. The core group was defined as Germany, France, and the three Benelux countries, Belgium, the Netherlands, and Luxembourg.

Since unification, Germany has become Russia's major sponsor within the councils of NATO and the EU. Germany is Russia's largest financial benefactor. During 1991-1995, grants and loans to Moscow from the Federal Republic have totaled over \$70 billion. Russia's debt to Germany was rescheduled in 1995, the third time in three years.

The current government will continue its strong support of free trade within the EU, whose rules determine most tariff policies. The incorporation of eastern Germany's economy has been accompanied by the subsidization of many firms there. Although such

subsidies are being phased out, pressure is growing from east German political leaders to save some large enterprises by maintaining large state subsidies.

The government will strongly support private enterprise and encourage foreign investment. Other than the most extreme left-wing parties and a small faction of the Greens, all major political actors share this approach. Long-term foreign investment has risen sharply, and the high level of overseas investment by German businesses creates a strong incentive to maintain open policies. Neither this government nor either alternative regime will impose new restrictions on investment.

2. German Shipyard Industry

Even though the German Navy does not own a shipyard, the Navy worries about the shipyard industry on which it is dependent. In former times, German yards dominated the European orderbooks, but that has ended. This fact is an actual concern of the German government. The government's maritime interest represented by the shipyard, has taken on the aspect of an external threat. Foreign shipyards completed 87 merchant ships during 1996 for German owners. These owners have fled the high price home yards for the less expensive yards abroad. Cost savings or cutting programs may bring the German shipyard industry to first place in a competitive world and also maintain German national interest [Ref. 17, p. 14]. Additionally, German yards have become convinced that co-operation between them will stimulate further benefits. An example of this is from the restructuring of the defense aviator sector and it seems that the shipyard industry should follow similar steps and consolidate that part of Germany's defense industry.

In the German shipyard industry, the Thyssen group dominates Germany's Naval shipbuilding sector through its units Blohm+Voss Industrie GmbH, Hamburg, and Thyssen Nordseewerke GmbH, Emden. These two units are specialized in the design and construction of surface combatants. A second group, Hannover-based Preussag AG, owns Howaldtswerke Deutsche Werft AG, Kiel, Germany's principle builder of submarines. [Ref. 13, p. 16]

3. German Management Model

The German approach to shipbuilding and ship repair is to use private shipyards. The German Navy does not have any of its own shipyards, however they have some specialized workshops mainly for weapon systems in the Navy "Arsenal." The German Navy owns these "Arsenals" and applies the Navy Owned and Managed Model to their management. Frigates, destroyers and small ships are refitted under the supervision of the Navy "Arsenal" in private shipyards. These yards compete for contracts. Weapon systems work is undertaken by the "Arsenal" or, in some cases, is contracted out by the "Arsenal." A similar approach was adopted for submarines, with the exception of contracts that are awarded to the yard which originally built the submarine. However, for reason of economy, competition for submarine work has now been extended to other shipyards with sufficient experience in handling non-magnetic steel. The "Arsenals" are located in Wilhelmshaven and Kiel.

D. FRENCH NAVAL SHIPYARDS

1. French Political and Economic Trends [Ref. 9, 10, 11]

Although the tradition of state intervention in the economy still influences attitudes toward domestic and foreign private business, the advent of the single European market has modified actual policy, leading to a reduction in economic regulations. The state intervenes primarily to help individual firms and sectors develop and become more competitive. Both the governing center-right coalition and the opposition Socialist Party (PS) operate from generally pragmatic views of the modern industrial economy. France welcomes investors from outside the EU and has reduced restrictions, but joint ventures in sensitive industries are closely monitored to ensure French control. Traditional protectionist policies are likewise giving way to a more open approach in response to the EU's single market and to growing confidence about facing international economic competition.

Since 1983, both left-wing and conservative governments have worked to reduce the state's traditionally large economic role through privatization, the removal of price

controls, the lifting of exchange regulations, and the loosening of investment restrictions. The center-right government is maintaining this approach, promising continued new privatizations and the abandonment of the 49.9% ceiling on private ownership of public enterprises. Tax rates do not discriminate against foreign businesses. All businesses are eligible for the same tax incentives.

The tradition of aggressive trade unions that strain labor relations is giving way to new patterns of worker-employer dealings. Deepening divisions among the major unions have cut membership of the work force, reducing the unions' influence. The French economy continues as one of the strongest in the EU. Growth in 1996 was around 1.2%, but will rise to 2.5% annually through 2001. While unemployment remains a continuing problem, growth in the French GDP should continue to be on a par with or in excess of other EU economies. Receipts from the privatization programs and a proposed increases in health insurance and social security taxes will assist in reducing the budget deficit.

Several years of low inflation are helping to increase the competitiveness of French industry, creating hefty current account surpluses and raising optimism in business and political circles. The current government also planned to reduce the government's budgetary deficit and maintain the policy of a strong franc in order to qualify for participation in the European Union's single currency by 1997. To meet these conflicting goals, the government expected to fund the attack on unemployment and budget deficit reduction through privatization of several state-owned enterprises.

Late in 1995, the government announced cuts in social benefits and public employment to further reduce the budget deficit and national debt in order to meet the Maastricht criteria to take part in the EU single currency.

France maintains close links to the Arab world through extensive economic ties and agreements for technological transfer with Syria, Iraq, Egypt, and other Arab countries. It is also a major supplier of military equipment in the region. The French position in the region has been weakened because France actively supported the US-led actions against Iraq in the Persian Gulf war and because France has increased its support for Israel.

Ambitious efforts from the government to simultaneously reduce unemployment and lower government deficits may speed the process of privatization. However, the government shares the traditional French interest in the state's role in overseeing the economy and protecting French firms against direct foreign acquisition. Continuing EU policies against subsidies and trade and investment restrictions may lead to further relaxation of economic regulations.

The current government decision in 1996 to streamline defense industries and to restructure the armed forces will have a strong economic impact on the areas where bases and defense industries are located. French officials have indicated that they have targeted 60,000 jobs in the arms industry for cuts by 2002. Nevertheless, the government continues to claim that this downsizing will be achieved without massive layoffs, and stressed "conversion" of defense industries in his July 14, 1996 "state of the nation" interview.

The privatization plan initiated in late 1993 has continued under the following government. Of the 21 major companies included in the program, nine have been privatized so far, including Banque Nationale de Paris, Elf Aquitaine, and Rhone-Poulenc. Privatization efforts continue on several fronts. In 1996, the government announced that as a part of a general restructuring of the defense industry, the Thomson Group (defense and consumer electronics) and Aerospatiale would be privatized.

The French government still maintains a large presence in key industries such as aeronautics, defense, banking, and insurance, and can still exert some control in privatized firms. Both Socialist and Center-Right governments have, however, accepted that reducing government involvement is the best way to spur economic growth, reduce the high unemployment rate, and meet the targets for European Monetary Union.

Free-market policies, an improvement in the international balance of payments, and the increase of French competitiveness will combine to counter traditional tendencies to support a more protectionist stance by the EU. The current president will, however, defend non-tariff restrictions and subsidies to protect farmers and the fishing industry. France's desire to be one of the leading partners in the EU will create constant pressure to reduce

restrictions on trade with nations both within and outside the EU. Any regime dominated by the center-right party will move to ease trade restrictions, although a socialist government would have actually a similar commitment to the EU and its objectives of trade liberalization.

2. French Defense Industry

The future of the four shipyards as part of the government depends very much on the government decision for the defense industry as a whole. Although, at the present, French government officials deny any national consolidation intentions, these officials point out that British, Germany and Italy have undergone national consolidation. The winds of privatization also blow in other French government industries. The privatization process of Thomson-CSF, as well as the merger in the aerospace industry between Aerospatiale and Dassault Aviator, are likely the first steps in a French Defense restructuring trend. This is the same trend in European industry and is a survival requirement for several European countries. The merger between the two aerospace industries is to strengthen French industry before it joins the European restructuring process. Some French government authorities indicate that:

...the restructuring of Europe's Defense industry requires a preliminary national phase [Ref. 13, p. 8].

Britain, France, Germany and Italy set up a joint armaments agency in February 1997, known as "Organisation Conjoint de Cooperation d'Armement," as an attempt by governments to jointly supervise cooperation programs and support Europe's defense industrial base. This agency's main obstacle is to the cross border consolidation of European Defense industry. This requires some surrender of sovereignty over their defense sectors. European nations are concerned for the loss of valuable national interests and capabilities of their defense industries. Although this is not a real loss because of the close economic ties, it means giving up part of their nation's valuable assets and their defense capabilities.

There is no evidence that the French Government intends the privatization of the French Navy Shipyards DCN. However, it is necessary to note that currently they are in a perilous financial situation, with continuing losses, along with other state owner companies such as Giat Industries, and the aircraft engine maker Société Nationale d'Etude et de Construction de Moteurs d'Aviation [Ref. 13, p. 8]. Nevertheless, France's naval industry plans to double its share of the world warship market over the next few years. This is a way to overcome the poor financial performance and to utilize in an efficient manner its unoccupied workforce.

Finally, the French President announced in February 1997 new reductions in defense spending levels, with the loss for the Navy of seven diesel-powered submarines, three frigates, ten general surface combatants and one third of its maritime patrol aircraft [Ref. 18, p. 1].

3. French Naval Shipyards Management Model

The French shipyards or "Direction des Constructions Navales"-DCN belong to the Government. The organization of the DCN includes a production organization and the offices in charge of defining the French Navy requirements. This office has some factories where combat and propulsion systems, and torpedoes are manufactured, along with four shipyards.

These shipyards use a Government Owned and Managed Model that is responsible to the Ministry of Defense under the French Government. Figure 13 shows the organization structure of DCN for the Naval sector. The shipyards are located in:

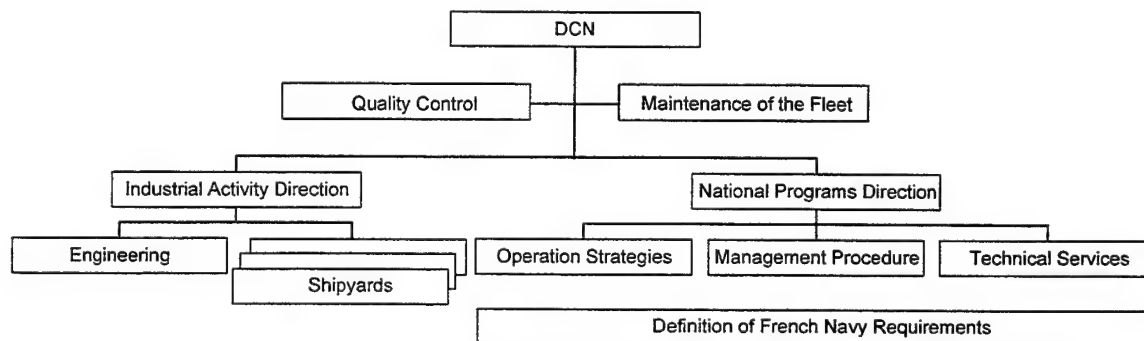


Figure 13. Organization Structure of the DCN

- Cherbourg, for Submarines and Fast Attack Craft
- Brest, for major warships and refitting
- Lorient, for Destroyers and Frigates, MCMVs, and Patrol Craft
- Toulon, for major refits

Part of the mission from the Industrial Activities Direction is to coordinate the Engineering Department and the four Shipyards. This office decides the most adequate products to satisfy the requirements of the Programs Direction. It also designs the policy for alliances around new construction programs and decides how to allocate the production load among these shipyards.

Most new shipbuilding programs are developed with a certain degree of co-fabrication between shipyards. For example, Lorient and Brest carry out the construction program for surface warships, and Cherbourg and Toulon develops jointly the work for the submarines construction. To develop an efficient co-fabrication systems requires that all the shipyards possess the same technical information and production process. These shipyards also use external subcontractors when time constraints demand it.

E. SPANISH NAVAL SHIPYARDS

1. Spanish Political and Economic Trends [Ref. 9, 10, 11]

After experiencing a boom since joining the EU in 1986, Spain's growth began to slow in the early 1990s while inflation and unemployment rose. After the painful recession in 1992-1993, signs of a solid export-led recovery emerged by mid-1994, although unemployment was still high. The recovery accelerated during 1995 and joblessness declined, setting the stage for future growth. Real GDP growth is forecast at 3.0% for 1997 and at an average of 3.2% annually for the next five years. However, prospects for long-term sustained growth and convergence with the richer EU countries depend on the government's success in tackling inflation and the public sector deficit, both of which will prove stubborn.

The task of stabilizing public finances and the economy is just beginning. The government failed to use the initial period of healthy economic growth to push through structural reforms in the state sector, leaving the biggest proportional cuts in the budget deficit to the period 1996-1998.

With a switch to the Popular Party (PP) of the center-right, the government will implement stricter spending controls to reduce the budget deficit and increase confidence in the currency. He will pursue an extensive privatization program and change strike and labor laws. More united than the Socialist Workers Party of Spain (PSOE), the PP might be somewhat more successful in implementing its program.

A new wave of Spanish nationalism has surfaced amid fears that the sale of Spanish industries to foreigners would create a shift of economic power to foreign sources.

In 1992, Spain, maintained the focus on long-term development programs. However, despite a massive infrastructure investment drive, Spain still lags behind the northern EU countries in infrastructure, especially the postal and telephone systems, roads, and transportation.

Spain joined the EU in 1986 and enjoyed the fastest economic growth of any EU member from that time up until 1991. Vibrant growth and heavy investment peaked in the period leading up to the 1992 Barcelona Olympics and Seville World's Fair. By the end of 1992, however, the economy was slowing.

The 1992-1993 recession, though sparked in part by the general European slowdown, also reflects specific Spanish problems such as high unemployment, a bloated public sector, and distressing inflation. Spain faces serious problems in returning to its status as a fast-growing economy within Europe. The government has attempted to address the problem with an ambitious package of new labor laws. The program so far has shown only mixed results; Spain is not attracting the kind of new jobs in industries that would help alleviate the problem of structural unemployment.

Government budget deficits also remain a serious obstacle to progress. Despite the government's reductions in this area, the deficit as a proportion of GDP is still not on course

to meet the convergence requirements for joining the Economic and Monetary Union (EMU).

Two political issues affect the current business climate in Spain: the need to create greater flexibility in the labor market and a minority government dependent upon ad-hoc coalitions to advance its legislative programs.

Labor market regulations in Spain are still too rigid, despite modifications in the first half of 1997. Companies in Spain faced with economic difficulties have problems downsizing staff, and are faced with Social Security and redundancy payments. Government efforts to eliminate these rigidities have been opposed by trade unions, but some progress has been made since the government of President Aznar won the popular elections in March 1996.

Spain's international position remains sound, despite a high trade deficit. Although many Spanish companies prefer to borrow abroad to win the lowest available interest rates, Spain's indebtedness is still low when measured by world standards.

Spain is in the process of bringing trade regulations into line with EU requirements by eliminating export subsidies and import quotas. Restrictions are therefore moderate to low. The only changes will be those imposed by the EU. Further reductions in tariffs, and import quotas for manufactured and industrial goods, will occur during the seven-year transition period.

The major political parties agree on the need for a liberal climate for foreign investment, although the leftist and labor have some reservations. The government encourages foreign investment in most sectors (except utilities) as a vital factor in bringing the economy in line with convergence targets. About one-half of manufacturing capital is in foreign hands, the motor industry is entirely foreign-controlled, and multinationals hold a high proportion of the chemicals, food, and drink sectors. This government will rely heavily on foreign technology and investment capital.

A set of reforms approved by the current government will promote private participation in financing of infrastructure, waste management, and transportation projects involving roads, sea ports, and airports.

Investments to upgrade Spain's infrastructure in terms of roads, airports, sea ports and railroads will proceed, whether with public, private, or joint financing.

Spain's government exercises influence in the economy more through regulation than through direct ownership, although the government does own part or all of several of Spain's largest companies. Under the center-right administration, Spain has moved more quickly toward privatization (out of conviction and because of the limited options available for curbing the budget deficit). The new government has adopted a privatization policy which divides state holdings into two groups, a holding unit for profitable or near-profitable ventures, separate from a group of chronically unprofitable companies. Companies in the first group will be privatized by the year 2000, following whatever deregulation or restructuring measures are necessary; companies in the second one will receive reduced state aid and gradually become candidates for privatization or closure.

Conditions for business, already liberal, are likely to ease further, as are the current regulations on foreign investments and capital transfers. Membership in the EU will enhance the country's liberal policies. Economic policies are not likely to differ under either government, as Spain continues to be guided by EU regulations that require liberalization.

2. Spanish Defense Industry

Spain, as most of the European countries, has a significant defense industry whose future must be analyzed in a regional context. At the present, the Spanish defense industry is in one of the hardest times due to the low activity, defense budget reductions, and high accumulated debts. A national privatization plan has begun to move the defense industry and other publicly-owned companies to the private sector. This is being done while retaining a so-called "golden share with veto power in case of national emergency." All three defense industries (aviation sector, tanks and armored personnel carriers, and shipyards) are to be privatized. Even though the shipyards are currently the best performing

in some current contracts. At the present time, the Spanish Defense Industry depends on foreign contracts to survive. This is because the Spanish government is improving other sectors of the country through a sacrifice of the armed forces capability [Ref. 19].

The navy shipyards are not the only yards with some survival problems. The Spanish Maritime Industry has significant problems and some private shipyards have already closed.

3. Spanish Naval Shipyards Management Model

The current Spanish Naval Shipyard, called "Empresa Nacional BAZAN de Construcciones Navales Militares S.A." was created by law in 1942. The shipyard was created as part of the defense industry and belonged to the National Institute of the Industry or "Instituto Nacional de la Industria" (INI).

BAZAN has the mission of building warships for the Spanish and Foreign Navies, Merchant Ships up to 1984, and the manufacture of Steam Turbines, Diesel Motors and Weapons, and the maintenance of ships. BAZAN has three Shipyards. They are located in Ferrol, San Fernando and the third in Cartagena.

The management model at BAZAN is the Government Owned and Managed Model where INI acts as an agency for the government and has responsibility over the shipyards.

The Spanish Naval Shipyards have a long tradition dated from 1726 with the creation of Naval Departments or "Arsenals" and the construction of slipways for the growing Spanish Navy.

BAZAN is a government owned shipyard managed by civilians, which depends, along with other industries, on the Defense sector of Spain and the Ministry of Defense.

F. CONCLUSION

A general overview over the major defense industry in Europe and the Nordic Nations obtained during the research of this study shows that the restructuring steps taken by some nations are necessary in order for them to have any remaining defense production. All these nations are currently affected by a deep and substantial reduction in their defense

budgets. This fact has pushed these industries into privatization, merger, and co-operation to develop different projects. However, it seems that some countries are more concerned than others for the loss of those defense industries that represent a high strategic value.

The political and economic trends of the European countries studied, indicates a movement towards an almost full privatization of state owned companies and the defense industry. Although some governments have not already made public announcements about navy or state owned shipyards, privatization seems to be the future trend.

The privatization decision may be supported by the fact that most of the European Defense Industry is already in the private sector. However, the final government decision should be made in favor of the national interest in order to safeguard the national security of the country.

The navies that have remaining shipyards can look forward to difficult financial times. Some of the solutions have already begun with co-operation or merger to resolve internal problems. Also, there are firm intentions to offer their products to the international naval market. In the cases of countries listed above and others like Sweden, Norway, Finland, Canada and Australia, there is a history of sales to the international naval market. Not only the navy and government shipyards are in crisis, but there is concern for the maritime industry in general. This industry is also in trouble around the world where old traditional merchant navies, are changing or disappearing. This fact has directly affected some navy shipyards, because they have had to share the shipbuilding and repair load with the private shipyards as a method to avoid a disaster for that nation's private shipyards. Consequently, most of the large private shipyards of the world are dependent on their respective navy's workload.

The inevitable conclusion must be that all future major warship programs will be collaborative efforts between the EC nations. This will be done to spread the work and the expense more equally in the community. This will be done for both regional programs and international projects.

Even though the British Shipyards are almost under the Privately Owned Managed Model following a privatization process, it is not clear or possible to obtain good numbers related to the advantage of a GOCO management. This is true even though it was announced that there is an increase in efficiency in comparison with past administrations. With a shrinking defense budget, it is also clear that under a private administration, the government does not need to consider new investment in shipyards. Nor does the government need to manage the industry, and/or investment in new equipment to maintain the high technology of the Royal Fleet. However, this may lead to a national security weakness when the British have given all the refit, repair and maintenance to the private sector or third parties.

None of the Navies studied have appointed private managers to run their Navy shipyards under the "Government Owned Contractor Operated" (GOCO) management model. All the Navies studied award some refitting work to national private dockyards. However, Germany, Canada, the Netherlands ensure that where a refit is carried out in a private shipyard, the weapons systems work is done within the Navy's facilities.

The European Defense Industry trends show that restructuring is a vital process for survival. This process started in the aeronautic sector and some limited weapons programs. Consequently, it is possible to infer that the navy shipyards could follow a similar process of multinational collaboration among the shipyards of the European naval community. Moreover, the navy or government shipyards actually represent a high budget load for the state. Governments are unlikely to use scarce resources to the advantage of a navy shipyard when instead these resources may benefit some sector of the population that represents a more immediate economic and political benefit.

V. THE SOUTH AMERICA SHIPYARD INDUSTRY

A. ARGENTINEAN NAVAL SHIPYARDS

1. Argentinean Political and Economic Trends [Ref. 9, 10, 11]

The Climate for business indicates that after decades of heavy state involvement in economic activity on the Peronist model, Argentina under the current president, Carlos Saul Menem, is turning sharply toward an economy dominated by free-market principles and driven by private enterprise. He has initiated a broad-ranging and intensive program of deregulation and privatization. He has slashed tariffs and import restrictions, sold key parts of the public sector, and opened vast sectors of the economy to foreign investment. A flurry of decrees issued in late 1991 swept away decades of economic regulations in an attempt to improve efficiency and cut inflation. Menem has closed dozens of government agencies and ended many bureaucratic controls on private business activities.

The public sector encompassed not only government services and utilities, but also enterprises in transport, mining, petroleum, manufacturing, banking, and communications. The military managed several manufacturing enterprises. Menem has moved swiftly to sell virtually all these state enterprises.

Investor confidence was badly shaken in 1994 and early 1995 because of rising US interest rates, delays in promised reforms in the labor market and social security resulting from Menem's drive for re-election, and the Mexico peso devaluation of December 1994. As a result, foreign direct investment fell to new lows in 1994. However, Menem's re-election in May 1995 improved the political climate, and foreign capital began returning. Even during the darkest days of early 1995, foreign investors, continued to announce new projects. Foreign investor interest has been spurred by increasing trade with Brazil following the creation of the Mercosur customs union.

As companies restructure to compete under Mercosur rules, productivity appears to be rising. However, many companies are still foundering in the wake of economic

liberalization and the elimination of trade barriers. The government plays a key role in trade and investment decisions, and bureaucratic delays are notorious.

The labor movement has lost power since Peron's era, but it is still influential. Main union groups oppose government efforts toward privatization and are unified in their outrage at Menem's attempts to implement labor market reform.

Some domestic economic problems indicates that the real GDP growth will improve in 1997, but not as much as hoped, averaging around 3.5% for the year. It should rebound by the end of the forecast period, averaging 5% per year through 2002.

The country possesses abundant natural resources and a skilled labor force. If it can fashion the proper mix of economic policies, it will prosper. His central strategy is to force businesses to become more competitive, partly through increased investments. Menem's measures may be diluted by his populist inclinations and by the desire to protect special interest groups, particularly strong labor unions.

The Menem administration has pursued wide-ranging economic reforms designed to open the Argentine economy and enhance its international competitiveness. Privatization, deregulation, fewer import barriers and a fixed exchange rate have been cornerstones of this effort. All these changes have dramatically reduced the role of the Argentine state in regulating the domestic market. The reform agenda, however, remains incomplete, including needed improvements in the judicial system and provincial administration.

In 1994, political compromise between the two major parties paved the way for voters to elect a constituent assembly to revise the constitution. The new constitution, approved in August 1994, provides for the direct popular election of the president and permits him to run for a second term. It also provides for the direct election of the mayor of the Federal Capital and senators. In May 1994, following a first term marked by economic success and political stability, President Menem was reelected to a second four-year term with nearly 50 percent of the vote.

The current Menem Administration continues strongly encouraged private initiative through privatization, deregulation of the economy, and encouragement of foreign direct

investment, all of which are vital to continued growth. Foreign investors are welcome in virtually every economic sector.

Although much has been achieved in such areas as deregulation and market opening, the government has been less successful in guaranteeing rule of law.

Social stability is also a potential issue of the future. Despite the outward measures of success, problems have cropped up in the model, such as high unemployment rates, regional disparities in economic development, and the lack of adequate social services. All these issues could erode popular support for the program and force the Government to slow the pace of change or even roll back some reforms. On the other hand, the public's memory of decades of increasing economic chaos culminating in the hyper inflationary episodes of 1989-90, which was the key factor to Menem's reelection in 1995 is still very fresh.

Menem faces serious challenges in his second term. He must improve the country's international competitiveness, restructure an inefficient bureaucracy, improve the ability of the state to deliver public services, and address the growing marginalization of most provinces.

Menem is not eligible to run in the 1999 presidential elections, but speculation is growing that he will seek to change the constitution again to allow him to run for a third term. In some ways, the Peronist candidate's defeat in the recent Buenos Aires election may increase Menem's interest in standing for re-election. Menem is still more popular outside of Buenos Aires than within it, but whether his popularity can be transferred to another Peronist candidate is unclear. Thus Menem may come to believe that the only guarantee of continuity for his reform program is for Menem himself to remain president after 1999.

Future of Argentina depends much more of the government person than in a country policy for growing.

2. Argentinean Maritime Industry

The Argentinean Maritime Industry has in general reacted well to the change in policy established by its government at the end of 1995. These changes were made after many years of bad management and poor financial results. Privatization has been the most

radical change in the areas that are most open to change--restrictive practices and over-manning of the ports and shipping facilities. Modern management has entered the port gates. The shipping companies have already reacted. New services have been offered at the new terminals. These services were developed or changed to take advantage of rising trade.

On the other hand, after the shipyard sector crisis caused by a significant reduction in the merchant fleet and budget cuts for the Navy, repair work was reduced and new ship construction was cut. Some Argentine flag vessels survived the crisis but need attention.

The surviving yards are those that have responded to the challenge of the changes demanded by the government. Most of the important and largest shipyards in Argentina have the advantage of the location where they are close to the primary ports. The largest private shipyards in Argentina are: TANDANOR-Talleres Navales Darsena Norte, and SANYM SA. [Ref. 20, p. 39]. A number of smaller specialist repair companies, for example, Cromwell & Cia SA., Astilleros Corrientes, Astilleros Alianza SA., and ASTARZA - Astilleros Argentinos Rio de la Plata SA., are doing poorly but surviving within the naval repair activity. This is a part of this industry reactivation resulting from government economical actions.

On the other hand, these shipyards have reaped substantial benefits from the economic problems in the nearby Brazilian shipyards. Most of the Brazilian market has currently shifted to the Argentinean yards. However, shipbuilding activity has almost stopped. Shipbuilding activity is waiting for the results of some bids.

Astilleros Rio Santiago (ARS), the former central government owned AFNE yard, is now under the state ownership of the Government of the Province of Buenos Aires. Employment is that government's current preoccupation. With a workforce in the thousands, the yard is struggling to survive.

3. Argentinean Naval Shipyards Management Model

The Argentinean approach to ship repair is modeled around a Naval "Arsenal" with docking facilities and specialized workshops. The Argentine Navy applies the Navy Owned and Managed Model to manage its Arsenals. The main Arsenal is located in Puerto

Belgrano Naval Base, which has a dry-dock of a maximum length of 222 mts [Ref. 21, pp. 75-76], and two floating docks, one of 750 DWT and the second one of 12,000 DWT. Additionally, the Argentinean Navy has four more floating docks, one located at the Buenos Aires Naval Base with a capacity of 1,500 DWT, and another at the Mar del Plata Submarine Base with a capacity of 3,500 DWT, and the last two floating dock at Dársena Este [Ref. 22, p. 19]. The Navy Arsenals are also equipped with at least four floating cranes.

With the new reactivation measures implemented by the government, nothing was announced about a change of the Navy Arsenal management status. The Argentinean Navy contracts private shipyards, in either the country or outside, for building new warships or submarines.

B. BRAZILIAN NAVAL SHIPYARDS

1. Brazilian Political and Economic Trends [Ref. 9, 10, 11]

By many measures-- geographic size, population, gross economic product-- Brazil was traditionally Latin America's dominant country.

Fueled by optimism over the economic policies of former governments, foreign investment rose during 1994-1996. Brazil still lags behind other Latin American countries in its ability to attract foreign money.

Despite recent successes the business climate remains mixed. Brazil's opening to foreign competition in the 1990s has stimulated major changes in previously protected industries. Companies have been forced to restructure and cut costs.

The cost of doing business in Brazil is high as a result of high wage and social security costs, expensive and inefficient ports, and a poor educational system that drive many companies to educate their own workers.

Positive signs do exist. Important reforms begun by former presidents in 1990 are in place, and the current government headed by Fernando H. Cardoso since 1995 is committed to opening the economy further to foreign investment and trade. The relaxation of rigid controls on the oil industry should attract foreign investment and stimulate new projects.

Congress also voted to end the state telephone monopoly, erase discrimination against foreign companies, and allow private companies to sell piped natural gas.

Regulatory discrimination against foreign companies is being stripped away; import tariffs are being cut; and the privatization program is still alive. Government plans to accelerate privatization and extend it to the energy, transport, telecommunications, and mining sectors. However, persuading Congress to speed privatization may prove difficult. This is seen as a vital test of the privatization program.

Increased public awareness of environmental issues and the rise of the Green movement have affected some business interests.

Labor conditions are mixed. Workers are in surplus and move freely in search of jobs. While skilled labor is in short supply, training programs can be effective. On the other hand, industrial relations have deteriorated. Frequent strikes and industrial violence threaten business.

The domestic economy showed a real GDP growth of around 3.8% in 1996 and will average 4.5% a year through 2001. Despite strong resistance, this regime will continue to move ahead with its economic program. Labor leaders and left-wing members of Congress will initially resist austerity measures and reject the economic demands of the international financial community. Domestic business interests will fight efforts to liberalize trade and investment and reduce the price-fixing power of cartels in the domestic market.

Although the economy overall had another good year in 1996, serious concerns have surfaced. Cardoso has been slow to address the underlying cause of inflation: the government's spending on unprofitable state industries. The reform program is far from complete as long as the government's overspending on payrolls and social security threatens to bankrupt it.

Prospects for the economy rest on Cardoso's ability to accelerate the reform process. Key reforms due to be passed in 1995 remained unresolved in early 1997. Priorities include tax reform, streamlining the social security system and civil service, and extending emergency powers to balance the budget.

It seems that the current government will succeed in implementing important constitutional reforms aimed at abolishing the disadvantages suffered by foreign companies under the current constitution. The government will open additional sectors of the economy to private and foreign investment. The attempt to maintain coalitions within Congress will produce a less comprehensive reform package than that sought by Cardoso.

The importance of foreign investors to the economy, as well as the key role of Mercosur, would enforce liberalization in this area.

Trade liberalization must be a key element in any plan for economic reform. At the same time, the government must deal cautiously with strong protectionist pressures, moving slowly to cut tariffs and nontariff barriers, constrained even further by the need to work with shaky coalitions in Congress. The legislature and the government bureaucracy will strongly obstruct change, and will almost certainly retard it more than the reformers hope.

Despite the criticisms of established politicians, the center right attracts substantial electoral support. Congressional elections will occur in October 1998, providing an effective referendum on Cardoso's economic policy. If a period of growth and low inflation precede the 1998 elections, the elections could provide a more reliable base of support for the economic reform policies championed by the center-right. Advisers to Cardoso have raised the question of amending the constitution to allow him to run for re-election in 1998. Whether or not Cardoso runs again, numerous center-right politicians are ready to pursue his reform policies.

2. Brazilian Maritime Industry

The Maritime Industry in Brazil has a very important role in the activities of the country and affects the country as a whole. In Brazil the question is not of ships that Brazil no longer owns, or the shipbuilding that it can no longer afford. Brazilians are more concerned with the maritime industry's very slow moving recovery from the chaos the industry faced at the end of 1995 [Ref. 23, p. 34].

The first shock to the Brazilians was the realization that there was a problem and that ships were leaving the Brazilian flag for other convenience flags like Liberia and

Panama. The appreciation of the Brazilian currency makes the shipbuilding and ship owning industries even less competitive. Shipbuilding stopped and the ship repair activity decreased enormously. Despite the government's reactivation plan, however, the Brazilian shipbuilding industry continues to suffer from a strong currency. This makes the yards noncompetitive, and creates a slumping domestic market with the changes towards protectionism in Brazilian trade. Currently, Brazil's south neighbor, Argentina is trying at this time to increase the activity of its maritime industry.

With most of the Brazilian trade protected, owners enjoyed high freight rates and could afford to pay into the government shipbuilding fund. The shipbuilding administration fund subsidized the yards, and the yards were able to build for Brazilian owners at prices well above the competition. When this protection was withdrawn, the shipowners entered into the real world. They flagged their tonnage outside Brazil or went out of business. The lack of contributions to the fund and the lack of high-value orders drove the yards into a crisis. Many yards were forced to rationalize their operations, shedding staff and merging in order to survive.

Currently five large yards survive: Caneco SA, CCN Maua, EISA the former EMAQ former IVI plant at Ilha do Governador, IVI Angra dos Reis, and IVI Caju. There also exist some smaller ship repair companies such as RENAVE-Empresa Brasileira de Reparos Navais SA. They survived with the economic problems of the shipyard sector [Ref. 24, p. 300]. In addition to the shipyard industry, a number of Brazilian public ports were privatized and the port system was modernized. However, maritime authorities continue to request a Brazilian Maritime Policy from the government [Ref. 25, p. 18].

3. Brazilian Naval Shipyards Management Model

The Brazilian Navy uses the concept of "Arsenal" for the development of the Shipyard Industry. The management model used by the Brazilians, is the Navy Owned and Managed Model. In this model the shipyard is part of the Navy's assets and the budget for the operation comes from the Navy's operational resources. All the repairs, and maintenance are made in the Navy Arsenals. If the government wishes to build new ships in

these Navy facilities, it is dependent on the resources available for those activities [Ref. 26]. The largest of the yards facilities in Brazil is the "Arsenal de Marinha do Rio de Janeiro." This yard has three dry-docks and one floating dock with graving docks of up to 70,000 tons of capacity. The other dock facilities are located at the Main Naval Base in Rio de Janeiro with two dry-docks; the Naval Base of Aratu-Bahia with one dry-dock and synchrolift; the Naval River Base of Val-de-Caes-Pará with one dry-dock; the Naval Base of Natal- Rio Grande do Norte with one floating dock; and the Naval Base of Ladário-Mato Grosso do Sul with one dry-dock [Ref. 22, p. 56]. All the yards have workshop facilities for repair and maintenance. In conclusion, and from the interview with the Brazilian Minister of the Navy, the Brazilian Government does not have plans to make changes in the current status of the its Navy shipyards facilities.

C. COLOMBIAN NAVAL SHIPYARDS

1. Colombian Political and Economic Trends [Ref. 9, 10, 11]

Given the social disorder and drug trade related problems, the economy has been remarkably stable and conservatively managed. Growth has been steady since the 1950s, and has averaged more than 4% in 1990-1996. Inflation has remained under control, debt is modest, and no firms have been nationalized since the 1960s. Moreover, Colombia and Chile are the only Latin American countries receiving investment grade ranking by the bond rating firms.

However, a general respect for private property and private business does not prevent the imposition of substantial regulations. High taxes and extensive restrictions sometimes discourage foreign investors. The constitution gives Congress the right to pass legislation to nationalize business property, but no significant political leaders support any such action.

Although economic success has been achieved despite a violent history, the present combination of political disarray and increasing violence threatens to damage the economy. Already in 1996, growth has begun to slow because of high interest rates, the collapse of the

construction boom, the high costs of fighting drug traffickers, and work stoppages. The nationwide strike by truckers beginning in late October 1996 has produced substantial damage to the economy. The political paralysis has also created a climate of uncertainty and pessimism that deters investment and business activity. Businesses, worried about the future, have postponed investment decisions.

Colombia has never been dependent on foreign portfolio income to finance economic growth. Most foreign exchange is earned from commodity exports of coffee, cocaine, and petroleum. The remaining restrictions on foreign investment have insulated it from the flight of sensitive foreign capital. As a general rule, the well-publicized problems of drug trafficking, guerrilla warfare, and human rights issues have not deterred investors, at least in the booming oil industry. Despite chronic bouts of political turmoil, the country has attracted substantial amounts of foreign investment.

Despite the political crisis, the country has received several high-profile investments, by Mexico's Cemex SA in cement companies and by a Spanish bank, as well as huge oil investments by companies such as Enron Corporation, Occidental Petroleum, and Texaco. According to the government, Colombia is planning huge infrastructure projects in 1997-2000.

At the same time, it is increasingly evident that many investors are shaken by the recent events. Financial markets have reacted badly to the drug scandals threatening the current administration.

The picture for foreign investment, especially in the petroleum sector, is mixed. On the one hand, investment has been boosted by capital to develop new oil fields. Because most of its known oil reserves were discovered by private companies, private investment is essential to maintain future exports and to exploit the two-thirds of the country not yet explored for oil.

On the other hand, many foreign oil companies have been wary of Colombia in recent years, citing high taxes and costs. Guerrilla attacks are a weekly occurrence in the oil fields.

The labor movement is weak and fragmented. Labor legislation favors workers who are already employed and stimulates labor substitution. Strikes and work stoppages are common, but high unemployment and the poor outlook for certain industries had curbed worker activism until a wave of harmful strikes beginning in October 1996. The inefficiency of the government bureaucracy has been an obstacle to business.

The domestic economy shows that the real GDP growth will be 2.8% in 1997 but will increase to average 4.5% per year through 2002. The government plans to implement more expansionary policies in a bid to regain some popularity in 1997, adding to the short-term economic woes. Import policies will be liberalized to attract the capital and intermediate goods necessary for economic expansion. As a result of less protectionist policies, the import of consumer goods will also expand as long as foreign reserve levels remain high. Increased consumer demand, combined with substantially greater exports of coal, petroleum, and nickel, will help the economy achieve higher levels of growth.

Colombia maintains a wide range of vital relationships with the US. Investments from the US account for more than one-half of all foreign direct investment. The biggest investor is Exxon through its participation in the massive Cerrejon coal project, but many other companies also provide substantial investments. The US also accounts for about one-third of Colombia's imports and exports. The US government has also made a significant contribution to the training of the army. US banks have provided the financing for many projects.

Colombia has become an increasingly important source of oil for the US, which could import as much as 10% of its petroleum from Colombia by 2000. The impact of revenues from petroleum and drugs is both a blessing and a curse. The country receives large inflows of capital from oil investments and through the repatriation of legal and illegal dollars by Colombians. This steady inflow buoys the economy, but makes it difficult for the government to restrain inflation and maintain exchange rate stability.

The central economic question for the medium to long term is how the government will manage its forthcoming oil boom. As the new oilfields come onstream, crude oil

output should exceed one million barrels per day by 2000. Oil adds an annual one-half a percentage point to GDP growth.

Rapidly increasing oil export revenues will also fuel inflation. Despite efforts to contain wage increases, greater consumer demand will result in continued high inflation.

Despite the economic slowdown and political crisis, the current president still holds some advantages. Despite the slow-down, the economy will still grow by at least 2.5% in 1997, and Samper plans to implement an export promotion program and carry out measures to modernize industry and rehabilitate the countryside. He also plans to make badly-needed investments in roads, bridges, and ports. These efforts will be partly funded by extra income from the new oil fields.

Although the economy continues to be well managed and to benefit from ample natural resources, its longer-term prospects are uncertain because of security threats and political disorder. The chief dangers: increasingly harmful strikes, the escalation in guerrilla activity, the major role of the drug trade in the economy and society, and the drug-money charges against the current president and others in his government. Since the current president remains in office, the government will be unable to do much to improve the business environment until the next elections, which are scheduled for May 1998, when a centrist candidate from either Liberal Party or the Conservative Party is likely to win the presidency. Despite an expected slowing of growth in 1997, the political situation should stabilize beyond that time. A Conservative president would follow the same domestic policies as the past two Liberal presidents because of both domestic and external pressures. As final result, either one or the other party, economic conditions are expected to improve marginally.

Finally, although the government indicate the intentions to reduce the constraint to enhance the economy, the effort of the presidents are diminished by the lack of internal control and guerrilla pressure.

2. Colombian Maritime Industry

The Colombian Maritime Industry has had very slow growth over the last five years. In Colombia participation in activities such as fishing, merchant shipping fleets, and sea-going infrastructure is very low [Ref. 27]. The Colombian Maritime Policy has been characterized by poor integration and erratic actions. This result is due to "... a lack of maritime vision and national maritime strategy from the leadership." [Ref. 27, p. 43]

Specifically, the only shipyard in Colombia is CONASTIL, in a country with coasts in both the Atlantic and the Pacific, with one of the largest Merchant Fleets in the world. "Flota Mercante Grancolombiana," the only shipyard, is out of service and has stopped its activities. Activities ceased in late 1994 due to financial problems [Ref. 24, p. 305]. Consequently, the Colombian Navy is currently obliged to do almost all of its major repair and maintenance in foreign shipyards. This represents a huge weakness for the Colombian Navy.

3. Colombian Naval Shipyard Management Model

CONASTIL, Compañía Colombiana de Astilleros S.A., began its operation in 1969. The initial activity was at the Colombian Navy in the Naval Base of Cartagena. In 1976, CONASTIL moved to its present location in an industrial zone called Mamonal, at Cartagena Bay. The initial corporation was formed with capital from IFI (Instituto de Fomento Industrial de Colombia) (60%), which is a government institution, PROEXPO (20%), and from the Colombian Navy investment funds (20%). This corporation followed a Government Owned and Managed Model because the majority of the investment is from government institutions. However, CONASTIL had serious financial problems beginning in 1990. The company reduced its activity, and two years later, in 1992, the company Schrader-Camargo purchased 80% of the stocks in the shipyard. The Navy remains with a 20% participation in this yard.

Under this new capital distribution, the shipyard management model change to the Private Owned and Managed style. Nevertheless, in an effort to save the shipyard, CONASTIL stopped its operations in 1994 with a huge debt. At the present, both the

company and the Colombian Navy are investing their efforts in structuring a new corporation to operate as a private company. This effort has not yet had positive results.

D. PERUVIAN NAVAL SHIPYARDS

1. Peruvian Political and Economics Trends [Ref. 9, 10, 11]

Peru is a republic with dominant executive branch headed by the President. After receiving a country in very unstable condition, the current President, Alberto Fujimori, has instituted radical austerity policies and accommodated the wishes of multilateral financial institutions and other creditors to improve the country's climate for business. The government has moved to liberalize the financial system, reopening the country to foreign banks. It welcomes foreign capital in its fast-moving privatization program and actively solicits foreign investors for the mining sector.

In courting foreign investors, especially those from Latin America, China, Japan, and other parts of Asia, Fujimori emphasizes his radical privatization program and his plans to dismantle the socialist legacy of the 1970s. A remarkable transition from statism to a market economy is well under way. Tariff barriers have been slashed, customs practices simplified, transport deregulated, the bloated state bureaucracy cut back, and new relations with the international financial community forged.

When Fujimori took office in 1990, he inherited a severe economic crisis. Battered by terrorism, capital flight, and hyperinflation. The inflation soared to 7,482%, a 80% of the work force was unemployed or underemployed, and one-third of the population was malnourished.

This mix of free-market and austerity policies has impressed the foreign financial community, which has helped revitalize Peru's economy. Since 1990, Peru has been transformed into one of the fastest growing economies.

The subduing of guerrillas and the imposition of free-market reforms under Fujimori have heartened investors, who are also encouraged by lower inflation figures and IMF's approval of economic stabilization policies. The stock market is performing strongly,

partly due to foreign interest. While Peru remains dependent on foreign capital, and is vulnerable to a sudden shift in investor confidence, optimism has been high since 1993. Fujimori's liberal investment code allows for unrestricted repatriation of capital, erases legal distinctions between national and foreign capital, and allows international arbitration of disputes. Investors are not subject to capital gains tax on profits from shares. Peru has abandoned its longstanding import substitution policies and reversed decades of state intervention. Fujimori has radically cut the state's share in the economy, from 35% in 1992 to just 5% in 1995.

The recovery spread to all sectors with the exception of government. In 1996, the agricultural and fisheries sectors led the Peruvian economy. In the long run, the mining and petroleum sectors offer the best prospects for growth as the country is believed to have large undiscovered resources. The base is being laid for sustained growth over the medium term. Several new major investments in this sector are planned in 1997 and into the next century. Nevertheless, it will be several more years before the 200 mining and petroleum projects currently on the drawing boards make this sector the engine of the economy. The infrastructure needed for such projects plus other demands of the private sector will stimulate growth of construction and related industries.

The government attained major successes in the pursuit of its goal of privatizing all state-owned enterprises. The higher 1996 revenues were largely the result of the sale of government shares in Telefonica, originally privatized in 1994. The introduction of private capital and drive into sectors as diverse as telecommunications, electricity generation, air and urban transportation, hydrocarbon development, mining, mail delivery, and banking has been a key factor in the revitalization of the economy. Political pressures caused the pace of new privatizations in 1996 and 1997 to slow significantly, but there are recent signs that the government is determined to get back on track. Current official plans are to complete the privatization program by the end of 1998.

Peru's railroads remain in bad condition and while the ports have seen some improvements, both remain in state-hands. The large investments necessary to refurbish

these operations, the uncertain future of the railroads, and concern about monopolistic practices at the ports once their managements are privatized, has raised doubts about how quickly privatization of these key sectors can proceed.

The domestic economic shows a real GDP growth will slow sharply to 4% in 1996, but should rebound to average 5% per year through 2001.

Despite Fujimori's official welcome of foreign capital, the bureaucracy sometimes moves slowly.

Foreign investment interest is especially keen in the mining sector, particularly in gold mining. Heartened by a new and liberalized mining code, better economic conditions, more flexible labor laws, and improving security conditions, many multinationals are considering new mining investments.

The presidential election will be held in April 2000, when a new Congress will also be elected. According to the constitution, Fujimori is not permitted to run for re-election. It is not out of the question, however, for him to seek to amendment to the constitution so he can run for a third term.

The key to long-term political and economic stability will be the ability of Fujimori and his successor to expand the base of economic growth to include more Peruvians.

On the other hand, Fujimori's disinclination to build political structures raises serious questions as to what will happen to the political system assuming that he relinquishes power in 2000. He has undermined the country's political and judicial institutions, leaving undisturbed Peru's ethnic and economic divisions. If the benefits of growth remain limited to the elite and foreigners, movement toward a stable democracy will be seriously retarded. In addition, the political succession must be managed smoothly if Fujimori does not run again.

Although trade liberalization is an important goal for Fujimori and his economic reformers, the growing trade deficit and demands from local business will fuel protectionist pressure, slowing progress.

2. Peruvian Maritime Industry

The Peruvian Maritime Industry has been influenced by the political events in that country. Although, the economic situation for Peru has been improving at a sustained but low rate, the only shipping company able to benefit from this recovery is based outside of Peru. Some government decision in the maritime sector has reduced the incentive for shipping companies to stay at home. Consequently, almost no Peruvian shipowner flies the Peruvian flag. The Peruvian Shipowners Association has lost its ability to influence its members and the government. The Maritime Association of Peru now only represents foreign-owned lines. The association is putting its weight behind some tax and regulation but finds itself acting against the interests of the shipowners as a way to bring maritime capital back to Peru.

The Peruvian Shipyard Industry is represented mainly by the SIMA Group (Servicio Industrial de la Marina). Although there exists some small shipyards, these yards are more specialized in repairs and building of 300 - 800 DWT fishing vessels, and are not considered or listed in publications that indicates the major ship-repair industry of Peru [Ref. 24, p. 337].

The Peruvian Government has announced a privatization policy for some government owned companies. In the Maritime sector, privatization initiatives have begun at Peru's smaller ports, but nothing was announced about the country's shipyards [Ref. 28, p. 28].

The Peruvian Maritime Association authorities are concerned about the lack of a clear legal framework for the government's privatization initiatives that would enable private investors to guarantee potential investment into these facilities. This investment would ultimately facilitate the growth.

3. Peruvian Naval Shipyards Management Model

SIMA is a state-owned shipbuilding and repair group with three yards. The SIMA Group shipyards have a Government Owned, Navy Managed Model where the responsibility of the management of the shipyards belong to the Peruvian Navy.

SIMA's main facility is in Callao. Callao boasts of a 25,000 DWT dry-dock and three floating docks of up to 45,000 DWT. Another facility further north is the installation at Chimbote. Chimbote has a 15,000 DWT floating dock. The smallest center, at Iquitos in the Amazon basin, handles mainly river vessels. The Callao center was established to cater largely to military work but now devotes up to 80 per cent of its resources to private sector jobs. Many of these jobs are in the fishing and industrial sectors. While SIMA's ship repair business is slowly improving, the shipbuilding side of the business is not. The shipyard is currently competing for some contracts for new merchant ships. But the group's last new shipbuilding contract was completed in 1988.

E. VENEZUELAN NAVAL SHIPYARDS

1. Venezuelan Political and Economics Trends [Ref. 9, 10, 11]

Despite Venezuela's immense oil wealth, 1996 was the economy's fourth consecutive year of recession, and inflation is the highest of all countries in Latin America. After strong growth in 1990-1992, the economy stagnated in 1993 and then fell into deep recession 1994-1996. At the same time, inflation, after declining for several consecutive years, began rising again in 1993 and was estimated at almost 87% in 1996.

These travails reflect the political turmoil that has engulfed the country, as well as erratic and questionable economic policies implemented by Rafael Caldera, the current President, since he took office in 1994. During 1994 and 1995, the economy was badly hobbled by government-imposed controls on prices, foreign exchange transactions, and interest rates.

The government is showing signs of restarting the privatization program that has been delayed since 1994 by an unenthusiastic government and by the economic crisis that depressed asset prices and made privatization very unattractive.

While the picture has brightened considerably, the long-term direction of policy raises many doubts. Memories of government restrictions on capital and profit repatriation

are still fresh. The domestic economy will be flat in 1997, but will average about 3% annual growth through 2002.

Despite efforts to diversify the economy, the petroleum sector still accounts for 75% of foreign exchange earnings and 25% of GDP. For many years, Venezuela's vast oil reserves gave both officials and the public a false sense of security, sustaining the comfortable belief that there was no need for the government to take tough action to reduce its deficit. Oil revenues have consistently enabled governments to delay cutbacks in subsidies, maintain state-run companies, and indulge in excessive regulation.

Because of the 1990 Persian Gulf crisis, which produced a surge in oil prices, US energy plans have assigned an increasingly prominent role to Venezuela, the only nation outside the Persian Gulf capable of significant long-term growth in crude oil exports. In 1995, Venezuela became the largest foreign supplier of oil to the US. Consequently, the US has shown increasing concern over the rise in political instability since 1991.

The Administration and Congress have continued the historic opening of the petroleum sector to foreign direct investment. Private investment in the sector has been rekindled over the past few years through strategic ventures and a program to contract out drilling of marginal fields. Expansion of the petroleum sector is expected to dramatically improve Venezuela's medium and longer term economic performance. There is also an urgency to open the mining and metals sectors to foreign investment through strategic partnerships, and raising revenues by privatizing state companies. Dramatic developments in these areas could result in an additional surge in foreign investment in Venezuela in the medium-term.

While the government hopes to develop "non-traditional" sectors, the major near-term growth prospects remain in the extractive and infrastructure-related areas; the growth industries are mining, petroleum and other hydrocarbons, telecommunications and other infrastructure-related areas, and power generation.

Venezuela achieved initial success in its privatization program with partial sales of the state telephone company, CANTV, and the state airline, VIASA, in 1991. The program

stalled as the country has struggled with banking and economic crises. In 1993, 1994, and 1995, only a few minor privatizations were completed. The government's privatization efforts were dealt a serious blow with its repeated failed attempts to sell some state-owned companies.

The Venezuelan Investment Fund (FIV) began 1996 with an ambitious plan to generate USD 4 billion in privatization revenue for the government, through the sale of its shares of CANTV, and six companies that are part of the state-owned industrial holding company. These sales are still pending, although the privatization program is gaining momentum and they have sold many banks and hotels. The major shipyard is included also within the state-owned companies.

It is important to note that in the current Venezuelan context, the term "privatization" can be confusing. There is a clear trend towards private participation in state-controlled industries through strategic associations or limited equity sales, which is frequently mislabeled "privatization" by the local media and government officials.

The Venezuelan government recognizes the need for infrastructure improvements, which are generally adequate (though deteriorating) in urban areas, and thin in the interior -- especially the agricultural flatlands.

Transport is mostly by road. An ambitious road-building program to be bid under the 1994 concessions law has been initiated, but little real progress has yet been made. Electric power is supplied by seven privately owned and five government utilities. Telecommunications have developed quickly since the partial privatization of the national telephone company and the opening up of the sector to private, including foreign, ownership.

The airports are under central government control, with the exception of two privately owned international general aviation airports and one managed under a concession.

The ports have now been turned over to the states in which they are located. Some states have chosen to turn their ports over to private companies for their operation,

maintenance and further development, while others are operating their ports as commercial companies. Port efficiency has increased since this move, but not enough.

At the same time, investors remain concerned that opposition by bureaucrats and unions could slow the government's efforts to streamline the public sector and sell off public enterprises. An additional source of fear is a growing nationalist attitude spreading throughout the country. Foreign capitalists have become a convenient scapegoat for the painful years of recession. Labor unions have opposed privatization from the start.

Nevertheless, the prospects for a sustained and fundamental restructuring of the economy are remote. Declining living standards will create social tension and political protests. As a result, episodic bursts of increased government spending will probably occur in an attempt to stifle public discontent.

Although economic pressures may produce more rhetoric than action, the climate for foreign investors will deteriorate.

Caldera's imposition of austerity policies in 1996 reduces the threat of hyperinflation but increases short-term hardships for many. While disaffection with Caldera is high, there is no indication that a dedicated economic reformer could win many votes in the general elections of December 1998. Even if the economic reforms introduced by Caldera are capable of producing long-term growth, their early benefits will be unevenly distributed throughout society with the corresponding public dissatisfaction.

2. Venezuelan Maritime Industry

Despite an advantageous location that is both as a gateway to the Caribbean and to South America, Venezuela has not developed its Maritime Industry to any great extent. Venezuelans prefer to leave the vessel-owning side of the business in foreign hands. The biggest shipowner remains the state, through the government's heavy industry businesses, Petroleo de Venezuela S.A. (PdV SA), the oil conglomerate, and the Venezuelan Corporation of Guayana, which transports bauxite, steel, iron and aluminum along the Orinoco River. Likewise, the greatest shipyard in Venezuela, DIANCA - Diques y Astilleros Nacionales CA, belongs to the government through a state institution named

“Fondo de Inversiones de Venezuela” (FIV) or Venezuelan Investments Fund. This shipyard is managed by the Venezuelan Navy. Additionally, Venezuela has the private shipyard ASTINAVE - Astilleros Navales Venezolanos SA [Ref. 24, p. 367] which has much less capabilities than DIANCA.

The consensus among Venezuelan maritime operators is that the Maritime Industry is antiquated, poorly maintained, and there appears little interest in modernizing and upgrading on the part of the Venezuelan authorities [Ref. 29, p. 43]. Many attribute the decline in efficiency to the fact that a large part of the maritime industry is still run by government agencies. The ports and also DIANCA shipyard is high on the government's priority list for privatizing, an event which could take place during 1997.

Venezuelan maritime operators are hoping that the country recovers during 1997 from a three-year recession period.

3. Venezuelan Naval Shipyards Management Model

DIANCA is a state owned shipbuilding and repair yard formed in 1905, and it depends on the FIV agency. The shipyard has a Government Owned, Navy Managed Model where the responsibility of the management of the shipyards belong to the Venezuelan Navy. The shipyard is currently experiencing difficulties in their operation due to a lack of maintenance of its equipment, modernization of the production systems, and because of other exogenous factors, such as high inflation index, and the significant reduction of the Venezuelan merchant marine. At present the Venezuelan government is considering the following alternatives for DIANCA:

- Establish a GOCO management model,
- Transfer the entire shipyard to the private sector, an establishment of a Privately Owned and Managed Model,
- Transfer the assets of the shipyard to the Navy, establishing a Navy Owned and Managed Model, or
- Close the shipyard.

The government may eliminate the last alternative because, despite all the problems in the maritime sector, the shipyard continues to be considered by the government as a strategic industry for the nation.

F. CONCLUSION

The Shipyard industry in Argentina like other South American countries is experiencing very hard and difficult times. The surviving shipyards have started a slow but sustained growth in ship-repair activity. Argentina still maintains at least a base of seven shipyards as part of its maritime power [Ref. 24, p. 297]. This indicates the government's compromise with the maritime national interest of Argentina.

Despite the current crisis in the Brazilian shipyard industry, it is being managed by the government to save that part of the national interest. The government has the vision not to mix it with private shipyard problems by making decisions against the navy's shipyard interests. This seems that the solution to the crisis and the action taken indicates the important place that the Maritime Interests have for that nation.

The lack of Maritime conscience and defense of the Maritime Interest on behalf of the Colombian government creates, as a result, a nation highly dependent on third countries to maintain their merchant fleet and the Navy's warships. This fact leaves Colombia in a high risk situation from a maritime point of view due to its weaknesses in the Maritime Industry.

Almost all political and economic trends in South America indicates that the government are implementing a free market structure and have developed privatization programs for the state-owned companies, there are important differences from the defense industry of the North Hemisphere countries. In South America almost all defense industry belong to the government with little support from the private sector. This means that the defense industry base in South America is in state-owned hands not in private hands. This gives a different meaning to the national interest of a nation.

The transfer of this high investment and competitive industry with high entrance barriers to the private sector is a risky decision. The government should weigh the national interest of the nation carefully, because of a possible loss of a strategic resource would lead to a weakness to the security of a country.

The behavior of most of the South American countries depends on the parties and the president who are governing the country at the time, but these policies affect the long term goals of the countries. These policies also introduce a degree of uncertainty for the political and economic future of the region.

In summary, it is possible to infer that the entire Maritime Industry, and in particular the shipyard industry, of almost all South and Central America is in a crisis. The destiny of Navy Shipyards are uncertain. This means that the national interests, represented by the maritime interests of the nation, are not well protected by their respective governments increasing their foreign dependence in such a vital and strategic matter as the shipyards.

VI. THE CHILEAN SHIPYARD INDUSTRY

A. SHIPYARDS CAPABILITIES

1. ASMAR Capabilities

ASMAR-Shipbuilding and Docking Company, located at the Port of Talcahuano in the Concepción Bay, VIII Región, is the largest shipbuilding, docking and repair complex in Chile. The history and tradition of ASMAR comes from the creation of the Navy Base in January 29, 1895. The Navy Base was created to support the ships of the Navy and to operate a new dry-dock which was built at the port and began running in February 1896.

In the same year, 1895, another Navy Base at the Straight of Magellan was created. Since 1817 an Arsenal in Valparaíso existed to support the ships of the growing Chilean Navy. These ship repair centers are the base for the emerging national naval industry.

Since late 1800's these facilities have developed continuously with the goal to satisfy the Navy and merchant fleet requirements. This development has seen a constant modernization and new technology. In July 15, 1924, a new dry-dock with larger capacities was inaugurated in Talcahuano, as well as new workshops.

After the 1950s it was necessary to modernize the existing infrastructure and to change the management model. This was done to offer a better service to the Chilean Navy and the national and international maritime community. Law N° 321, dated April 6, 1960, created the Shipbuilding and Docking Company-ASMAR. ASMAR is a state owned company with autonomous management, whose primary activity is to efficiently satisfy the repair needs, careen³ and construction of vessels for the Chilean Navy.

ASMAR may extend their services to other navies and to national and foreign shipowners. The bill also established that ASMAR would consist of the Naval Arsenal Facilities, docks, workshops that the Navy had in Valparaíso, Talcahuano, and Punta

3 Lay a ship on it side for work on the hull.

Arenas at the Strait of Magellan. ASMAR also will consist of all the facilities created in the future by the company.

ASMAR started in the shipbuilding business at a time when only ship repairs were made. Later in 1979 automated facilities were inaugurated.. A growing demand from the Navy and some private shipowners for new construction resulted in the construction of a slipway for shipbuilding up to 50,000 DWT. Figure 14 shows the geographical locations of the ASMAR's yards.

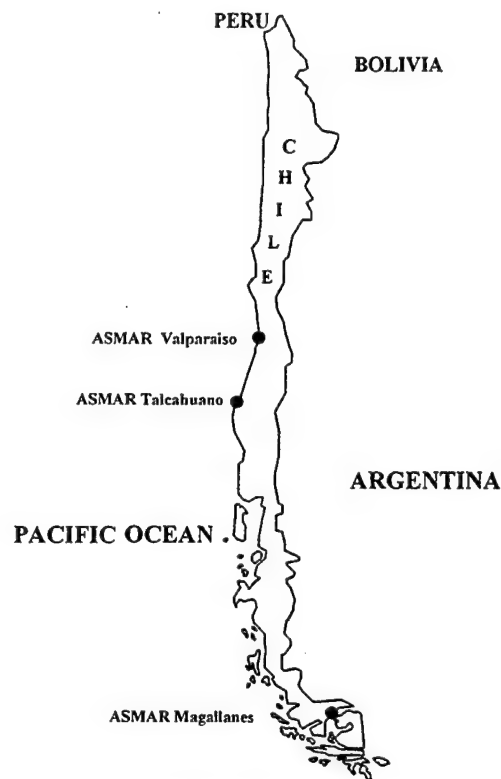


Figure 14. ASMAR's Major Facilities

The most important ASMAR industrial plant is the Talcahuanos Shipyard. It has two dry-docks, the largest with a capacity up to 96,000 DWT. There are four floating docks and more than 1,700 mts. of berths, equipped with all the services to make afloat repairs. The dockyard facilities provide a full range of repair, maintenance, modernization and building of: warships, merchant vessels, fishing boats and offshore equipment. Heavy industries are also being assisted by the dockyard. ASMAR must be able to maintain and repair boilers, turbines, combustion engines, electric motors, servo-motors, winches, guns,

periscopes, antennas, transducers, hydrophones, torpedo tubes, missiles launchers, and gyroscopes. The shipyard has a Weapon Shop with the capacity to maintain, modify and design components, equipment and entire weapon systems. For the fishing industry, ASMAR offers many kinds of vessels such as trawlers, purse seiner and other special designs. The main facilities of ASMAR Talcahuano includes the following:

- **Structures Workshop** - Transformation, enlargements and major repairs to vessels hulls and structures. Recovery of damaged ships.
- **Metallurgics Workshop** - Special welding, foundry, copper/steel alloy casting on induction furnace up to 500 k. Test/Assay materials labs, non-destructive test (penetrating liquids, ultrasound), metallographic analysis, chemical analysis with spectrometer.
- **Piping And Boiler Repair Workshops** - Skilled workers for the repairing of boilers and naval/land heat interchangers, repair and construction of steel/copper alloy piping circuitry. Manufacture of ventilation piping and asbestos-free thermic isolators.
- **Mechanics Workshop** - Repairs of valves, turbines, pumps, ship propellers, steering wheels and their driving mechanisms, machine tools works for the repair of heavy equipment, dynamic balancing.
- **Electricity Workshop** - Repair, recovery and rewinding of electric machinery (generators, engines, converters). Repair and reengineering of naval electric switchboards, electrical channeling, breakers calibration of AC.
- **Workshop** - Gritting, sand and waterjetting. Skilled workers for the recovery and reconditioning of the vessel's habitability areas.
- **Diesel Service** - Repair of internal combustion engines of different power rangers, with factory engineers assisting in the current representations. Reconditioning of turbochargers, auxiliary machinery, speed control and injection systems assisted by labs and test banks Diesel engine bank test up 6.600 kW. Authorized workshop services for: Sulzer, Man B&W Alpha Diesel, Caterpillar, MTU and Paxman engines. Diesel engine spare supply.
- **Electronics Workshop** - Diagnosis and repair of radar, communication and sonar units. Diagnosis and repair of printed card boards. Calibration of electronic instruments with source-traceable primary patterns.

- **Weapon Mechanics Workshop** - Diagnosis and repair of oleohydraulic/pneumatic systems, including static and dynamic test. Flushing to hydraulic circuits. Design and manufacturing of parts and spares with highly accurate machinery. Diagnosis and repair of optical parts (infrared sensors, light amplifiers, binoculars, periscope) including test and calibration. Diagnosis and repair of radar antennae, Fire Control Directors and Artillery Parts.
- **Systems Workshop** - Diagnosis and repair of navigation equipment such as: inertial platforms, gyrocompasses, logs, anemometers. Diagnosis and repair of different Command and Control Systems including syntony processes and operational test. Validation of Artillery/Missile Systems.
- **Weapon Engineering Department** - Design and implementation of electronic engineering to avoid logistic obsolescence of equipment and systems. Radio-frequency systems and microwave parts analysis. Design and manufacture of supervising systems and control of propelling plants, including monitoring and control of the different variables encountered during the ship's operation.
- **Fishing Area** - Careen for fishing vessels either in dry or floating dock. Engineering research and enlargement of fishing vessels. Recovery of propelling lines with variable path shafts. Modernization of the fishing system to operate as an alternative unit (either trawler or fene fishing). Modernization of propelling systems of fishing boats.

ASMAR also has available a flying squad service, with specially trained technicians, who can travel anywhere in the world to carry out repairs in port or at sea. Figure 15 shows a view of the ASMAR Talcahuanos Yard. The industrial plant of ASMAR, Valparaíso, is oriented to make afloat repairs and to the construction of small fiberglass boats for the Navy.

ASMAR Plant, located at the Strait of Magellan, is based on two yards. One located in "Bahia Catalina" has a marine railway with a capacity of up to 4,000 tons. This railway can be used for dry docking and general repairs. The second plant is located in "21 de Mayo." This shipyard has a slipway capacity of up to 1,000 tons. The slipway can be used for dry docking, and the purpose of sand blasting and painting and other general repairs afloat as well.

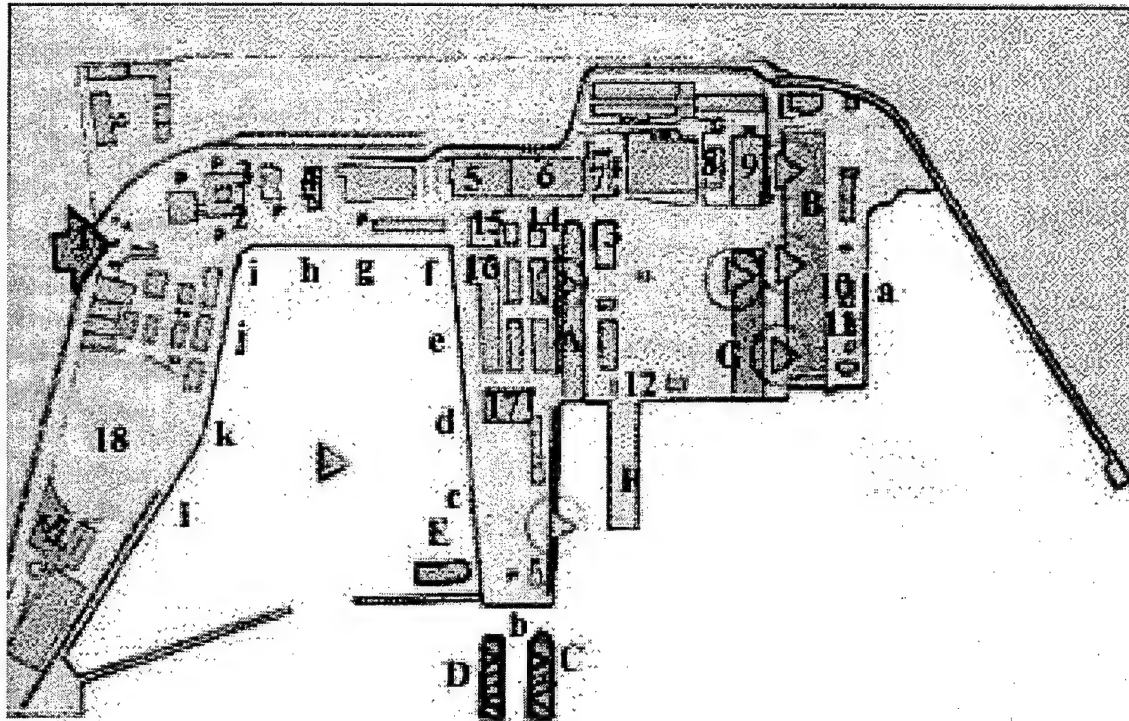


Figure 15. Talcahuano's Yard

From Ref. [30]

A	Dry Dockyard #1	1	Main Gates to Dockyard, Security	10	Crew/Officer's Restroom
B	Dry Dockyard #2	2	Administration	11	Kitchen for Crew
C	Floating Dockyard Mery	3	Marketing Management	12	Restroom for Crew
D	Floating Dockyard Mutilla	4	Emergency Services	13	Electricity/Electronics Workshop
E	Floating Dockyard Manterola	5	Repair Workshop	14	Repair Manager
F	Construction Slipway	6	Heavy Mechanics Workshop	15	Laboratories
a-j	piers	7	Carpentry Workshop	16	Casting/Foundry Workshop
		8	Boiler Workshop	17	Piping Workshop
		9	Steel Workshop	18	Dockyard for fishing boats

The permanent labor force at all ASMAR Company plants totals about 3,500 people. ASMAR has the responsibility to train their personnel in order to satisfy Navy requirement.

ASMAR has formed related companies and joint ventures, with the view of widening its services in the fabrication of offshore equipment. These joint ventures are through ASOM, systems engineering for defense with SISDEF and floating dry-dock facilities through SOCIBER in Valparaiso. All these sister companies are jointly owned

with foreign-based companies. This has enabled ASMAR to keep pace with the latest international developments and updating the companies own technology.

The above capabilities makes ASMAR one of the most important shipyards in the South-Oriental Pacific Ocean.

2. Other Chilean Shipyards Capabilities

The Shipyard Industry in Chile is not large. The largest and the farthest away is the shipyards at ASMAR. This shipyard has the capabilities indicated above. However, as indicated in *Fairplay Directory*, ASENNAV - Astilleros y Servicios Navales SA., Astilleros MARCO Chilena, SOCIBER - Sociedad Iberoamericana de Reparaciones Navales Ltda., are the most significant shipyards after ASMAR. Additionally, ASMAR has little workshop experience in afloat ship-repair. [Ref. 24, pp. 303-304]

SOCIBER is a sister company of ASMAR. SOCIBER was created in a joint venture with BAZAN, the government shipyard of Spain. It has one floating dock with a capacity up to 10,000 DWT, and also its own workshop for ship-repair.

ASENNAV is a shipbuilding and repair yard with capabilities to handle fishing vessel up to 1,400 tons. This shipyard also specializes in catamaran and luxury boats. ASENNAV builds ferries with a total overall length less than 50 MTS.

MARCO is a subsidiary of MARCO Seattle and San Diego in U.S. MARCO's market segment is in building and repairing fishing vessel with an overall length up to 60 MTS.

With the capabilities indicated above, almost all merchant vessel and Navy ships have no other possibility than to do docking or new construction at ASMAR. From a ship-repair point of view, the private sector has no experience and almost no capabilities for warship repair of either submarines or missiles vessels.

B. ASMAR MANAGEMENT MODEL

1. Background

The history of the shipyard shows us that the current company was established in 1960, and made up of the former workshops of the old Navy Arsenal to repair the ships. The enabling law which gave life to ASMAR is contained into the Law N° 321, dated April 6, 1960. The purpose of ASMAR is stated in the first two articles from the law. The law established that ASMAR constitutes a legal person with public rights, and has an autonomous administration. Likewise it established that the primary activity of the Shipyard must be repairing of the Chilean Naval Ships, although ASMAR may repair vessels from other navies and national and foreign merchant ships. Additionally, ASMAR may do work for other services which belong to the Chilean Department of Defense.⁴

ASMAR's relationship with the government is as a government owned company through the Department of Defense and the Secretary of the Navy. However, the Director, who is designated by supreme decree signed by the President, is also responsible to the Commander in Chief of the Navy for the good management of the Shipyard. Consequently, ASMAR has implemented a Government Owned-Navy Managed management model.

It is very important to pointed out, that although ASMAR is a government owned company, since its creation, neither the government nor the Chilean Navy has ever financed the activities for the normal operation of the company. In other words, ASMAR has always been self-sufficient in its operation and has generated its own resources to satisfy the requirements for the Chilean Navy and for third parties. This means that ASMAR is not a financial load to the Chilean Government.

2. ASMAR's Mission and Strategic Orientation

The objectives of the creation from ASMAR was to serve the Chilean Navy Ships and included in ASMAR mission:

4 Updated Text of the Law N° 321, "Texto actualizado de la Ley Orgánica de ASMAR."

Astilleros y Maestranzas de la Armada, ASMAR, is a public company, of autonomous administration, inserted in the Naval and Defense Industries, whose primary activity is to efficiently satisfy the repairs needs and the careen for the Chilean Navy vessels; likewise repairs and careen for Chilean or foreign vessels and marine artifacts, and build vessels and marine artifacts for the Chilean Navy and other buyers.

Its capabilities will be developed with the perspective of the Chilean Navy demand basis. In all the activities that the Law authorizes ASMAR, it will use its capacities with competitiveness and profitability criteria.

Considering the impulse force and the objectives established by the Law, ASMAR has the following strategic orientation:

- To give complete satisfaction to the repair, refit, maintenance and new construction requirements of the Chilean Navy.
- To maintain a capability structure according to the six-annual Navy Plan for repairs and refits, and also for the new Navy ship building requirements.
- To exploit commercially the remaining yard capacity between the national and foreign maritime industry.
- To manage ASMAR as a corporate system of three shipyards and its related companies (joint ventures). The management model should optimize the services towards the Chilean Navy and also to the maritime industry with the current industrial capabilities in order get the best commercial outcomes. The organizational structure and business segments are shown in Figure 16. From this it can be seen that the ASMAR shipyards belong to the Ministry of Defense Structure. Some function of the Director of ASMAR are the responsibilities of a Director Board under the law.

3. Relationship Between ASMAR Shipyard and the Chilean Navy

In the ASMAR mission, the primary object of the shipyard is to serve the Chilean Navy and to satisfy all the navy's requirements. Consequently, the relationship between the shipyard and the Chilean Navy is guided by clear agreements. The primary one is the Navy-ASMAR Agreement or "Acuerdo Armada-ASMAR" signed in December 1994. Before this agreement the relationship between both institutions was oriented mostly to financial-accounting issues. The "Acuerdo Armada-ASMAR," in addition to improving some norms

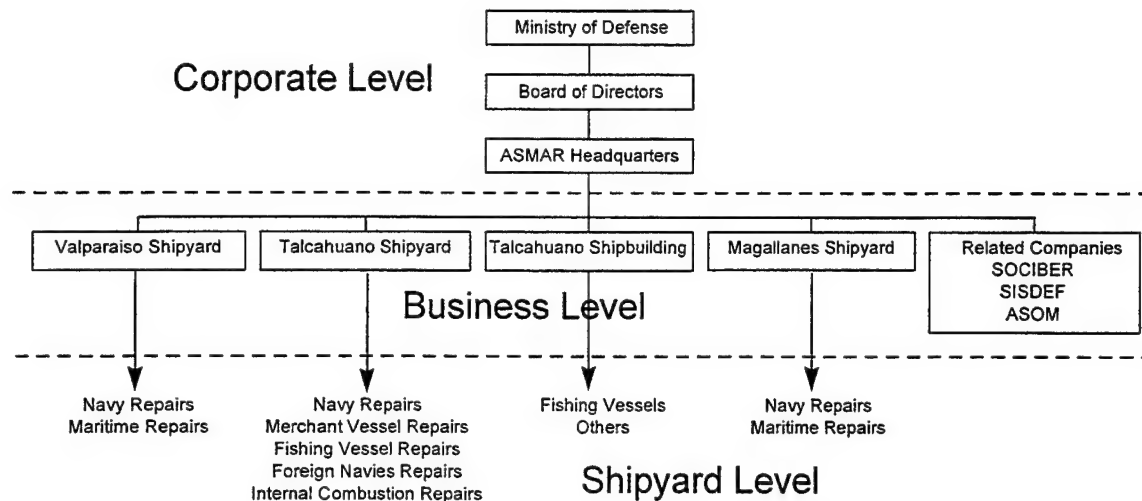


Figure 16. The Organizational Structure of ASMAR

of cost distribution, also includes the subjects that contributes to the improvement of services to the Navy. The Armada-ASMAR agreement does not include new construction for the Navy. New construction is treated separately on a case by case basis through independent contracting. The agreement addresses subjects related to: the technical and infrastructure requirements, navy-human resources norms, commercial and financial norms about the navy workload among the three ASMAR's shipyards, investment norms, procurement norms, and subcontract norms. Even though all the norms are important to good management of the shipyards and the relationship with the Navy, the agreement's greatest impact is on the output of the yards. This concept was the "risk pricing" or the firm or fixed price quoting for the individual jobs or contracts. This has had a major impact on the productivity of the yard and also reduced costs for the Navy. The Shipyard is required by law to do the Navy work at cost, but the Navy must also assure a minimum workload for each Shipyard Industrial Plant.

This ASMAR-Navy agreement is put into effect by signing a contract each year between the Navy and the Shipyard Headquarters. This contract specifies the Navy workload for each shipyard plant, the man-hour price for each workshop, and other special issues, and is valid only for that particular year. The main factors that guide the ASMAR-Navy Agreement are shown at Figure 17.

Additionally, by law, the Navy could receive up to a 30% of the yearly net income of the shipyard. The shipyard must be used also as a ship repair facility during the next fiscal year. Consequently, one of the goals of the Navy is to make more efficient use of the shipyard. This contributes to an increase in the Navy's repair and maintenance funds.

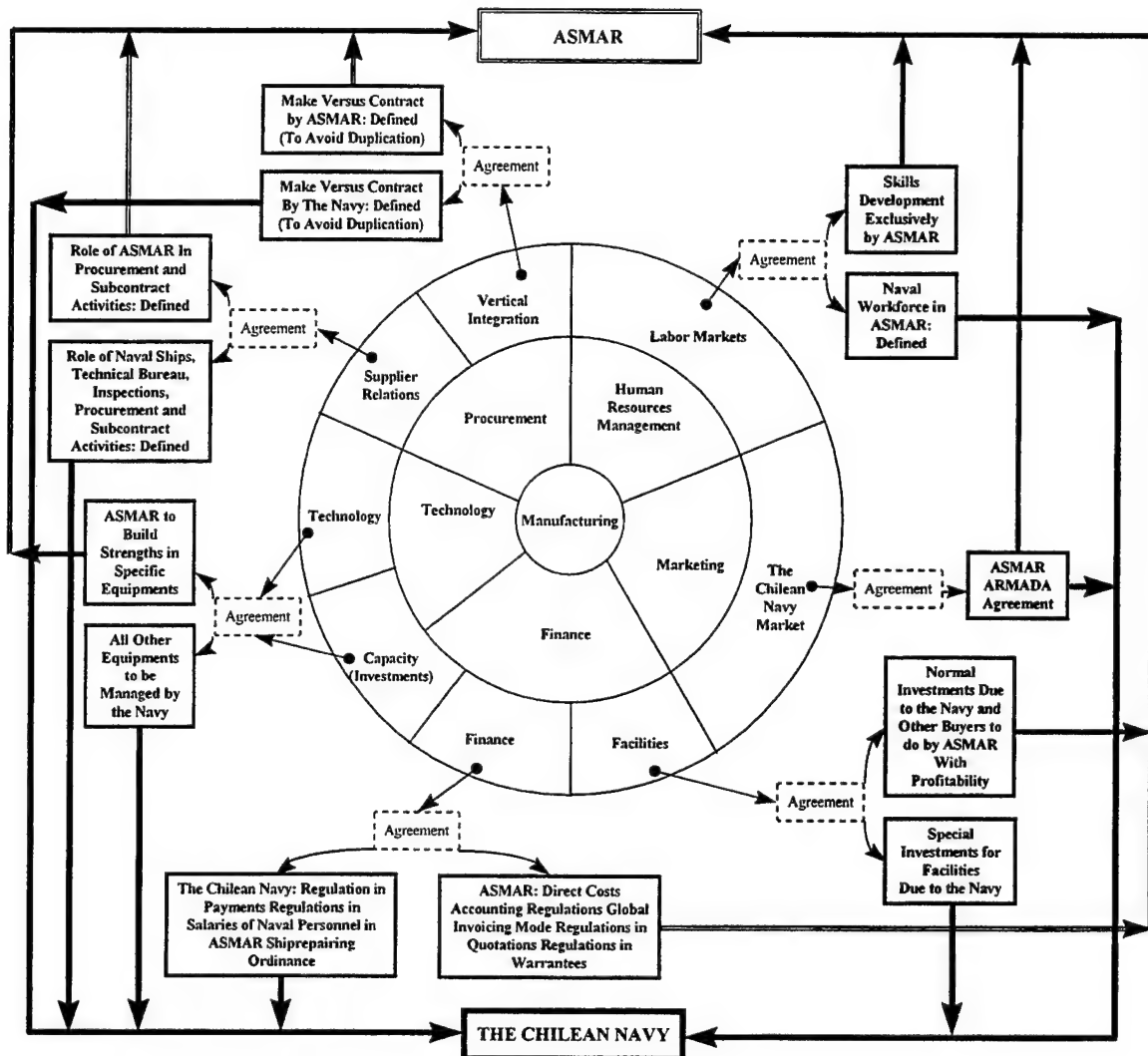


Figure 17. Factors that Guides the ASMAR-Navy Agreement

VII. DEFENSE INDUSTRY IN SOUTH AMERICA

A. SOUTH AMERICA DEFENSE INDUSTRY TRENDS

1. Background

As was indicated in the preceding chapters, the defense industry is currently in a crisis. The degree depends on the efforts developed by the respective governments in support of the industry. This support is according to the real value and relative weight that a nation gives to a factor called National Security. The defense industry is one of the tools to contribute to the National Security. From a theoretical point of view, given the status of national defense as a pure public good in the economics literature, the condition for the optimal provision of national defense is the sum of the marginal benefits to each number of society from the last unit provided that is equal to the marginal cost of providing that unit. The substantial question is when the satisfaction of such a condition would actually lead to the optimal provision of national defense.

One of the topics that almost all the governments have on their agendas is the part that the defense industry plays in the National Defense. The current study considers the Defense Industries of Argentina, Brazil, and Chile because they are the most significant countries with defense industries where it is possible to find information. Table 7 (Figure 18) indicates their arms transferred, and Table 8 (Figure 19) indicates the Defense Expenditure in these and other South American countries.

The Tables indicate that the greatest defense expenditures reduction occur almost for all South American countries in the late 1980s, since the expenditures have remained relatively stable.

The end of the east-west tensions reduced or removed support for many regional conflicts in Central America, Africa and Asia. However, this does not mean that the armed conflicts have disappeared. There remains some areas of potential conflicts, for example in the Middle East, Israel, Ecuador in South America, etc. The existence of democratic

government does not assure, as some analysts maintain, the avoidance of wars, because the source of conflict is an opposition of interests between two states due to competing policies. Examples are Grenada and the Persian Gulf for the United States, and the Falklands War for Great Britain, where both countries acted in defense of their national interests.

Table 7. Arms Transfer Deliveries, 1984 - 1994
(constant million dollars 1994)

Year	Argentina		Brazil		Chile		Peru	
	Import	Export	Import	Export	Import	Export	Import	Export
1984	678	166	180	865	235	28	277	0
1985	280	107	80	481	27	107	80	0
1986	260	52	234	429	65	26	221	0
1987	227	88	265	819	101	214	555	0
1988	401	85	637	850	73	340	36	0
1989	58	70	255	139	93	186	197	0
1990	22	22	156	78	78	11	56	0
1991	11	5	172	86	75	0	54	0
1992	10	5	94	209	52	5	63	0
1993	20	10	61	51	41	10	10	0
1994	10	0	90	80	90	0	20	0
Total	1,977	610	2,224	4,087	930	927	1,569	0

From Ref. [31]

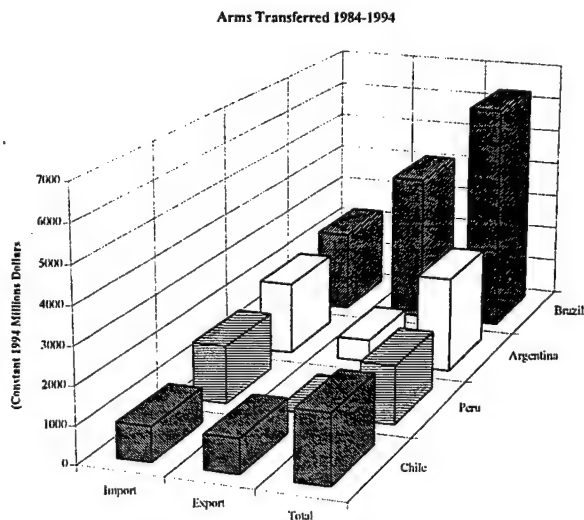


Figure 18. Arms Interchanges of Argentina, Brazil, Peru and Chile

Table 8. Defense Expenditures, 1984-1994
(constant million dollars 1994)

Year	Argentina	Bolivia	Brazil	Chile	Colombia	Ecuador	Peru	Uruguay	Venezuela
1984	10130*	79	3630	1008	581	293	2492*	321	1076
1985	7384*	NA	3843	1004	656*	329	2835*	307	941
1986	8223*	127*	4789	919	644*	352	3263*	319	1062
1987	5711	177	5494	1203*	706*	315	2741*	254	1468
1988	5490	176	7559	1149*	843	352	NA	286	1090
1989	5061	153	8402	1061*	1000*	325	NA	321	1057
1990	3792	158	9078	1193*	1203*	423	782*	327	1046
1991	2942	122	7194	1218*	1387*	493	509*	303*	2120
1992	4666	106	5717	1088	1265*	521	746	326	1550
1993	4328	124	6599	1063	1515*	459	753	298*	1050
1994	4716	130	6427	966	1190	550	797*	412	747

* Estimate based on partial or uncertain data.

NA: Not available.

From Ref. [31]

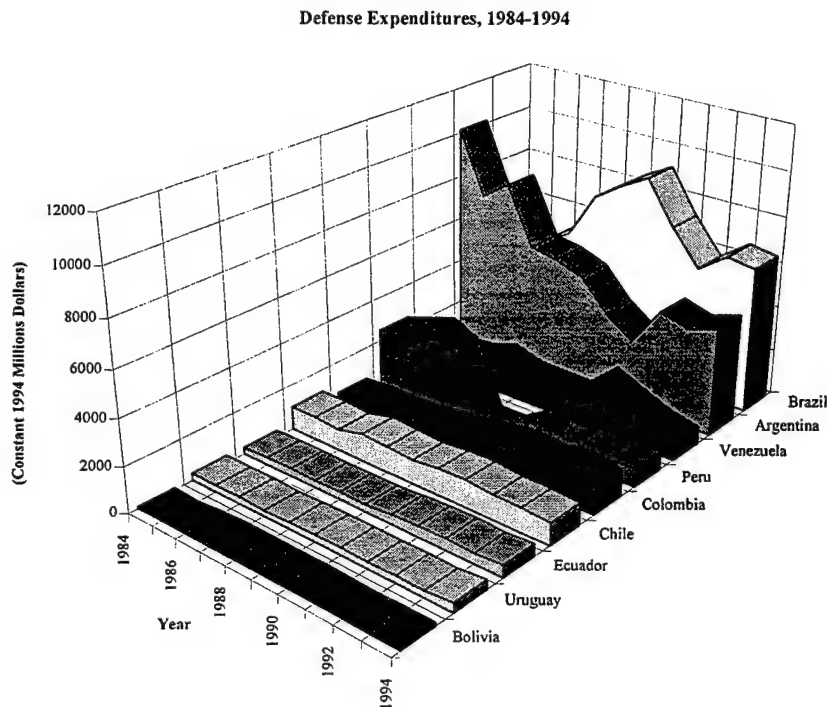


Figure 19. Defense Expenditures 1984-1994

2. Argentine Defense Industry

Argentina got into the defense industry business in the early 1970s. This was mainly in order to gain autonomy in defense procurements. In 1974 Argentina created an aircraft industry called Fábrica Argentina de Materiales Aeroespaciales (FAMA). This company has developed two aircraft models in the last two decades -- the Pucará and the Pampa. The last developed with the support of the German factory Dornier. Both aircraft models are selling below expectations. Additionally, during the past decade, in a joint venture with EMBRAER, a Brazilian aircraft factory, Argentina tried to develop a passenger plane. This failed because of the financial problems in the Argentine Government.

Argentina has also tried to build a medium tank. The project was canceled in 1991 with the closure of the factory TAMSE. From a naval point of view, the government shipyard, Astilleros y Fábricas Navales del Estado (AFNE) built two destroyers, British Type 42, and assembled some German corvette Type Meko. Naval activity has stopped and currently the assets have been transferred to the Government of the Province of Buenos Aires. The Province has changed the name to Astilleros Rio Santiago (ARS). This company is also in a very critical condition. Another defense project developed in the 1980s by the Air Force was the Condor II -- a rocket with a range of 1,000 kilometers. However, it was officially halted by the Argentinean government in 1992. The official reason was that the project was very expensive and lacked results.

Considering these internal economic problems, which means budget cuts to the defense sector, the Argentine Armed Forces do not entertain the idea of continuously upgrading and modernizing. With the lack of a viable defense industry, and resources to modernize through foreign countries, the effort to renew Argentine material is focused on close negotiations with the U.S. [Ref. 32, p. 34] In the case of the Argentine Air Force, new training aircraft and an upgrade of the A-4 aircraft is underway, the task being led by the Lockheed Martin Argentina. Additionally, Argentina has been relying heavily on excess U.S. equipment to modernize its Air Force.

The Argentine Army is also looking for new equipment and upgrades despite the budget constraints. Project "Palmaria" is a plan to mount Italian-supplied 155mm artillery on the Argentine medium tank. Although the U.S. government decided to allow Argentina to buy the tube-launched, optically tracked, wire-guided antitank missile, the Argentine Army has been focusing on obtaining equipment virtually free from U.S. excess stocks. It has received UH-1H helicopters and Mohawk reconnaissance aircraft.

The Argentine Navy had been deeply involved in peacekeeping missions, so despite the budget constraints, there are no plans to cut the size of the Navy. Indeed, the Navy stresses the need to move ahead with plans for modernization, where the first step is to seek financing to complete two German-designed-MEKO-140 class corvettes. The vessels are being assembled in Argentina.

Some help for Argentina is also being provided by the U.S. government. The U.S. Congress has recently passed a motion to integrate Argentina into the same status as that of a NATO country with regard to assistance [Ref. 33]. The scope of this arrangement and the significance of this alliance is not clear yet, however, what is clear, is that the Argentine government understands the importance of the defense industry and how to protect its national interest. The government has developed a partial solution for the development of the defense industry and averted an economic crisis, via foreign support.

3. Brazilian Defense Industry

Brazil was the first South American country that competed in the defense market of the highly industrialized countries. Brazil tried to enter this market by producing low technological level weapons to compete with more developed producers. Despite of the economic situation of Brazil, the defense industry was prosperous during the 1980s. There are three successful companies: the Empresa Brasileira de Aeronáutica (EMBRAER), ENGESA, and AVIBRAS.

With the creation of the private company, Engenheiros Especializados S.A. (ENGESA), Brazil achieved great success with a wheeled armored vehicle in the early 1970s. ENGESA achieved contracts with more than thirty countries and was recognized as

a major world manufacturer of armored vehicles. After this success, the company tried to advance and compete with the world class manufacturers of armored vehicles. The project started in 1984 by building a tank of 41 tons. ENGESA directed its effort to the Middle East, specifically to Saudi Arabia. The huge investment ended when the Saudis bought tanks from General Dynamics in the United States. ENGESA focused its efforts on exports without any intention of having the Brazilian army acquire the tank. In 1988 ENGESA was near bankruptcy. Additionally, defense products were affected by political events. Most of the time, large defense manufacturers started a new project with the security that at least its own Armed Forces would purchase the product.

A similar case faced AVIBRAS, a company that specialized in artillery missiles. Its principal market was Iraq. In the early 1990s AVIBRAS was in a very bad financial state. This situation was very difficult to overcome.

EMBRAER was a mixed company with mixed capital and controlled by the government. It achieved high success with the military and civilian versions of its airplanes. It seemed that EMBRAER was the most successful company from the Defense sector in South America.

The Brazilian Navy was and is also currently working on a project to develop a nuclear submarine. The project has had a high priority in the Navy as a strategic requirement to protect the sea lanes [Ref. 26]. In general Brazil has had great success in military manufacturing when it developed products of relatively low level of technology. Brazil has satisfied the requirements of developing countries of the Southern Hemisphere. However, at the present, the Brazilian Defense Industry is in a state of under or low production.

4. Chilean Defense Industry

The Chilean Defense Industry is modest compared with that of Brazil and Argentina. Their defense industry's base is built from the companies that are grouped around their respective services which are their main clients. The three main companies are: Fabricaciones y Maestranzas del Ejército (FAMAE), Astilleros y Maestranzas de la Armada

(ASMAR), and Empresa Aeronáutica Nacional (ENAER). These companies use the Government Owned and Services Managed Model. The main mission of these companies is to satisfy the respective requirements of the services. FAMAE satisfies the requirements for the Army, ASMAR for the NAVY, and ENAER for the Air Force. However, all three companies have put their remaining capacities to work for third parties. Chile has only one private industry involved in defense work, "Industrias Cardoen."

FAMAE has developed projects to build armored vehicles, which has satisfied only the institutional requirements and generated very low or no interest from the international market. In 1991, FAMAE announced a project to build a light tank of 22 tons. Trying to satisfy international requirements in the Middle East, FAMAE started the project to build bombs that would be launched from airplanes. A political decision interrupted the project. However, FAMAE offers in their brochures different types of bombs for the defense market. Additionally, with a license of Scheizerische Industrie Gesellschaft (SIG), FAMAE satisfied the Chilean Army requirements for automatic machine guns and pistols. It also manufactures different types of ammunition for the Army. Finally, in the electronic field, FAMAE developed an anti-aircraft defense system, which can be mounted on military vehicles. Despite the great variety of products that FAMAE can offer to the Army and to third parties as well, the overall financial results are not as successful as expected.

Another company which belongs to the defense industry of Chile is ASMAR, whose capabilities were described in Chapter VI. ASMAR's primary goal is to satisfy the requirements of the Chilean Navy. In contrast with FAMAE, normally over the 70% of the future working load of ASMAR is planned up to one year before the start date and around 50% of these jobs are allocated by the Navy.

The remaining capacity is mostly subcontracted by merchant vessels, fishing vessels, other navies, with some new construction by private owners and the Navy. ASMAR started in the repair business as Arsenals in the Navy, but as indicated in the preceding chapters, it was reformatted as company in 1960.

These shipyards have been developed for the needs of the Navy. These needs drive a well-planned expansion. As a result, ASMAR has never been a budget burden for the government. ASMAR has always been self-sufficient and has had adequate capital for work and development.

The third of the government-owned companies, ENAER, is managed by the Air Force. This company was created in 1984 to satisfy the maintenance requirements for high technology-equipped aircraft. Around 80% of the annual sales of ENAER come from services to the Chilean Air Force. The main project from ENAER is related to the construction of the new basic training airplane -- "Pillan." Pillan has begun a transfer of know how from its contract with Piper Aircraft Corp. This new training aircraft has found great success with foreign countries as well. The second project is building a new advance training jet for the Air Force in a contract with CASA-Construcciones Aeronáuticas S.A. in Spain.

Additionally, ENAER has developed some upgrades for the combat aircraft of the Chilean Air Force. This has been done in collaboration with foreign companies and these projects have ended very successfully. ENAER has built parts and pieces for other aircraft builders like CASA I Spain, EMBRAER in Brazil, etc. In general the Chilean Air Force has used ENAER to upgrade the capabilities of its current aircraft and to improve its maintenance programs.

The only private company in the defense industry in Chile is "Industrias Cardoen," which started in 1978. This startup was to meet a requirement of the Chilean Army to build the armored vehicle "Piraña"(six by six wheels), using a license from the Suice Company Mowag. At this time the company tried to develop other armored vehicles, but has had no success either for the Chilean Army or for the international defense market. At the beginning of the 1980's, Industrias Cardoen started the development of a bomb launched from an aircraft. They had good success in the Middle East market, but the business ended with the international embargo to Iraq.

Industrias Cardoen also assembles a long distance cannon for South Africa. Chilean forces are not interested in this type of cannon. It also attempted development of a type of helicopter and high explosive bombs. This got the owner of the company into some economic difficulties internationally. Consequently, there was a reduction of these activities in his industry.

In relation to arms transfers, of the three countries described above, Chile has the lowest rate of interchanges. This means in some sense that the Chilean government should not underestimate its defense requirements considering the arms trade in the surrounding countries. Figure 18 (Page 106) indicates graphically the arms interchanges of Argentina, Brazil, Peru and Chile.

B. CHILEAN DEFENSE POLICY

At the present, the Chilean State does not have an explicit Defense Policy. The current government has been inclined to publish a Chilean Defense Policy, where government agencies and political parties have given indications of their opinions of the focus for a defense policy.

Despite the fact that Chile does not have an explicit Defense Policy, the country has operated under an implicit Defense Policy. This policy is constructed under current norms that regulate the defense activities of the country.

It is possible to establish some theoretical framework to develop a defense policy. An approximation of a defense policy starts with an understanding of the fundamental goals of the state in terms of its "Permanent National Objectives." One of the pillars which contribute to the Permanent National Objectives, is national security. National security is an obligation of the state, one of the vital elements for the survival and development of the nation. One component of national security is national defense -- a public good which should be ensured by the state. It is the responsibility of the government to gain the participation of all the action fields of the country: interior, economies, defense, foreign relations to national defense. To coordinate and to implement the efforts among the

different action fields, the government should develop a policy that has a permanent character. Long-term goals should be maintained beyond particular government and particular ideologies. This would be an identifiable "Defense Policy." Those parts of the National Policy oriented to the National Defense that contribute to the National Security of the nation would be its "Defense Policy."

The objective of the Defense Policy would be to identify the national activities which give the society an adequate level of security, preserve the territorial integrity, protect the sovereignty, the national independence, the institutions and the historical and cultural identity of the nation. At the same time, the policy should contribute to the regional equilibrium and safeguard world peace. The Defense Policy as part of the National Policy determines the objectives of the National Defense and also the resources and necessary activities to obtain its goals. Consequently, and in particular in Chile, a Defense Policy could be developed and articulated.

C. DEFENSE AND THE INDUSTRY BASE

The level of spending on the military is a constant source of public debate, and it will remain so as long as civilization exists. Some compare defense budgets to an utopian standard, others define the cost of national defense as a reduction in the number of civilian goods and services the people may consume. This view states that defense expenditures divert scarce resources from other uses, and this results in a reduction in private consumption which lowers the well-being of the society. This argument is the traditional "guns-butter tradeoff" economic paradigm. While it is by definition true that defense outlays displace other uses of those resources, there is no obvious conclusion that overall economic well-being or growth is affected by this displacement of these resources. What is the value for a nation of its national security? National security could be viewed as having a higher value to the nation if a nation has lost its security.

At the present, defense analyses are changing their understanding of economic aspects of the military sector, in a nation where one of the economic factors is the defense

industry. This is the economics of defense spending and is termed defense economics. Much of the discussion in the literature on the subject deals with defense spending in terms of its opportunity costs or the alternatives that are sacrificed. Thus, in an era of expensive equipment, rising weapons costs, and increasingly constrained defense budgets, nations face questions about the efficiency and competitiveness of their Defense Industries. The likely question is -- What are the benefits and costs of a Defense Industrial Base (DIB)?

The concept of the DIB has various definitions:

- The DIB comprises a wide range of firms which supply the Defense Department and the Armed Forces with equipment which they require.
- The DIB consists of those industrial assets which provide key elements to military power and national security: such assets require special attention by government.
- The DIB refers to those sectors of the country's economy that can be called upon to generate goods, services and technology for ultimate consumption by the state's Armed Forces. A DIB must fulfill two requirements: provide the normal peacetime material equipment of the country military; it must be rapidly expandable to meet the increased demands of wartime or emergency situations.
- For the USA, the DIB comprises prime contractors, subcontractors, and parts suppliers operating in publicly and/or privately owned facilities supplying air, land, and sea systems. In addition to ensuring that the USA is self sufficient, the defense industry is required to expand rapidly in times of national emergency. [Ref. 34, pp. 182-183]

These definitions show the significance of the DIB for national security. However, it is misleading to refer to the DIB as a single, homogeneous entity. In many nations with a DIB, the supply side of the defense market consists of varying numbers of small to large-sized firms, either publicly or privately owned, with different degrees of specialization.

A free market view would leave the size and structure of the DIB to be determined by market forces, including foreign competition. However, the government, Defense Departments and the Armed Forces may wish to retain key national assets. These assets

may affect the national security and the national interests as well. The benefits from a DIB include the following: [Ref. 34, pp. 185-187]

1. National independence, security of supply (self sufficiency) and responsiveness in emergencies and war.
2. Maintenance of a capability which a nation believes will be required in the future.
3. Foreign freedom from monopoly price increases.
4. Avoidance of unsuitable equipment not tailored to a nation's requirements.
5. National economic benefits such as acquisition of technology, skills and an industrial base.
6. Leverage diplomatically resulting from an independent source of military technology.

Governments may value national independence and the self-sufficiency offered by a DIB as an insurance policy for the nation. This is often the major benefit from a national DIB. It frees a nation from dependence on potentially unreliable foreign suppliers for essential defense equipment, particularly during a crisis or conflict. It also enables a nation to modify its equipment quickly during a conflict. But it does not follow that a national DIB will always provide suitable equipment at an affordable price within the required time scale. Where a nation has special needs, it must ask how much extra it is willing to pay for weapons or other items designed specifically to meet its requirements.

On the other side, a DIB may enable a country to be a more informed buyer and also improve its bargaining power when buying abroad. The strength of the leverage will depend on the potential cost of domestic development. However, this argument does not necessarily justify maintaining a large DIB with high technology capabilities for the Armed Forces. A defense budget cut or disarmament may also not be justified, even though it may show a reallocation of resources from military to civil uses. These cuts may bring adverse effects to both the national security and domestic sectors. Figure 20 indicates how cuts in defense spending impact on various national security and domestic inputs.

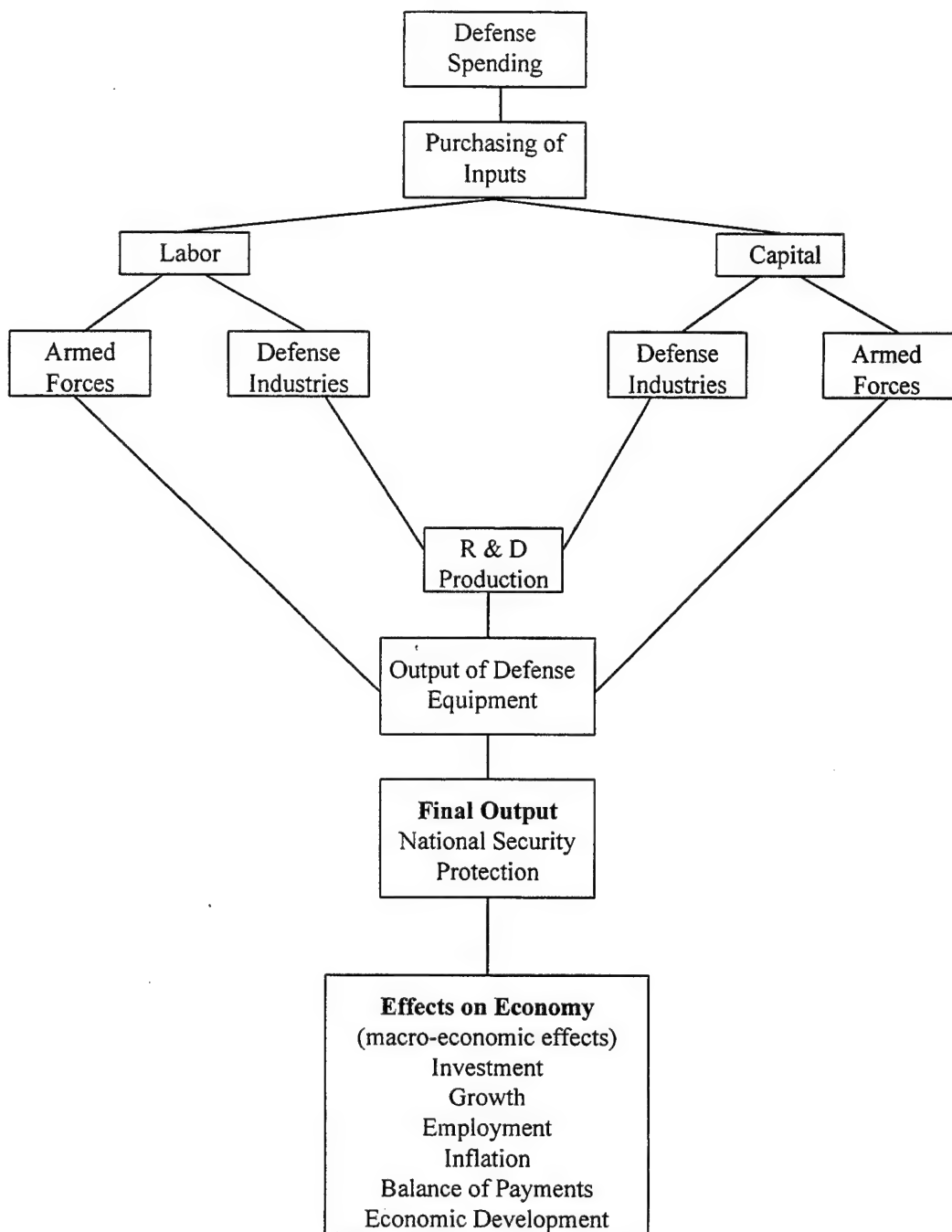


Figure 20. The Effects of Defense Spending
From Ref. [35, p. 264]

For example, cuts in defense spending will reduce the demand for manpower and capital in both the Armed Forces and the defense industries. The result will be job losses and closure of military facilities. This will create negative effects in specific towns or regions. It is difficult to evaluate the benefits of the reallocation of defense resources in another region of the nation versus the loss to national security and self-sufficiency.

Many developing countries have created a DIB (e.g. Brazil, China, India, South Korea, Malaysia). In these countries a DIB provides a means of acquiring new technology and acting as a source of growth for industrialization. The DIB contributes as well to import savings and offers the possibility of earning valuable overseas currency through exports.

Critics of DIBs point to monopoly-oligopoly and the absence of competition for contracts and poor labor productivity, etc. In addition, the defense industries in Europe are criticized by excessive and wasteful duplication of research and development (R&D) and for relatively short production runs. It is generally believed that Europe's defense industries are inefficient and not competitive, especially in relation to the USA. [Ref. 34, p. 177]

Some of the benefits outlined above also differ in importance and relevance when they are applied to DIBs in developing countries. A feature of the debate about the DIB is the general lack of quantitative evidence or the availability of an accurate method to establish the benefits and costs. As a result, it seems that the development of a country's DIB belongs to the political realm of the government and in the government's commitment to the national interests. However, the behavior of the decision makers of the nation can be explained, to some extent, by using explanations from "Institutional Theory," which involves social processes, obligations or actualities which come to take on a rule-like status in social thought and action. Actions are taken because people or organizations have the power to enforce their demands [Ref. 36, p. 239]. Without technical, or scientific analysis, the decision process becomes political and reflects the power of organized interests and the actors who mobilize around them [Ref. 33, p. 13].

D. CHILEAN POLITICAL AND ECONOMIC TRENDS [Ref. 9, 10, 11]

Chile was the first Latin American country to undertake market reforms including the privatization of most state enterprises, the reduction of tariffs, and an opening to foreign investment. The results have been impressive: uninterrupted growth, record low inflation and unemployment, and a healthy trade surplus. Economic success is based on high rates of domestic savings and investment which provide the capital needed to fuel growth and allow it to operate largely independent of foreign capital.

Chile's economy has expanded for the last fourteen years, averaging over 6 percent growth per year. This growth has been led by a boom in exports, which are concentrated in primary products and processed natural resources, principally copper, fresh fruit, and forestry and fisheries products. The export boom has been sparked in recent years by soaring investment, both foreign and domestic. Both the product mix of and the markets for Chile's exports are becoming increasingly diversified, with the dependency upon copper declining and Latin America joining the U.S., Asia, and the European Union as important purchasers of Chilean products.

The surge in foreign investment has kept the balance of payments positive for the last several years, and international reserves have risen accordingly.

Chile's stellar economic performance also reflects a cyclical increase in prices for its main commodity exports, especially copper and wood pulp. Record exports fueled a strong trade surplus, reflecting high copper prices and increased export volume in some non-traditional goods such as wine and salmon. A mining investment boom related to Chile's main export, copper, has contributed to the strengthened economy. On the other hand, the economy is less dependent on copper, because of diversification and strong investment.

Chile has maintained good relations with its international creditors and has substantially reduced its foreign debt through an aggressive program of prompt (even early) payment, swaps, and buybacks.

The decline in international investor confidence in Latin America after the December 1994 Mexican currency devaluation had little effect on Chile beyond brief stock price declines and a temporary halt in the issuance of Chilean stock on Wall Street via American Depository Receipts (ADRs). Chile's high domestic savings rate (fostered in part by mandatory retirement contributions administered by private pension fund management firms) means that it does not depend on short-term foreign capital to finance its investment. Because foreign investment in Chile is mostly direct investment, it is not likely to flee the country in response to temporary bad news. Chile's high rate of investment means that production is likely to continue growing rapidly over the next several years.

Because of its traditional small, export-based economy, Chile has aggressively sought trading partners. The country has gained access to other markets through bilateral or regional negotiations, most notably free-trade agreements with Mexico in 1991, Venezuela in 1992, and Colombia in 1993. Chile became an associate member of Mercosur in June 1996, and has joined the Asia Pacific Economic Cooperation (APEC) group. It cannot become a full member though, because Mercosur's variable external tariff regime is incompatible with Chile's uniform 11% tariff. Argentina and Brazil are among Chile's fastest-growing markets, and the Mercosur deal widens Chile's access to these key neighbors. Tariff reductions have also demonstrated that Chilean industries can not only hold their own against imports, but can also compete internationally. As a result, Chile has diversified its trade relations. Japan is its biggest export market; intra-regional trade has increased since 1990 and accounts for about 15% of exports.

Chile expects to become the next member of NAFTA, but negotiations have been stalled by resistance in the US Congress. As a result, NAFTA accession will not be possible before 1998.

Canada and Chile already signed a more limited bilateral trade and investment pact. Trade between Canada and Chile is relatively modest, but Canada is one of the biggest foreign investors in Chile, and Canadians would like to secure foreign investment protection guarantees similar to those under NAFTA. Chile is also increasing its trade with

Central American countries. It will also maintain the policy of permitting joint ventures in some of the remaining state firms in the mineral sector.

Businesses in Chile are predominantly owned and controlled by private interests. Although governments of the last twenty years have privatized many state corporations, the state retains holdings in several industries. The most important public corporation is CODELCO, the world's largest copper company, which the government has said it will not sell. In 1994 and 1995, the current administration (center-left coalition) sold the government's remaining share in an airline and its electricity, shipping, and radio holdings. Major new highway projects and port and airport infrastructure are being built under a concession program.

The Chilean government has targeted the highway network for more, mostly private sector, investment. With the government awarding over \$1 billion in road concessions to allow private firms to build and manage toll roads. Concessions either have been awarded or are in the process of being awarded for the most heavily used main highway.

Many international airlines operate from Santiago's airport, linking Chile with the United States and Europe. The government is upgrading many regional airports and expanding the international airport in Santiago through awards of concessions to private companies.

Chile's railroad system, the fourth largest rail network in Latin America (5,511 miles, or 8,870 kilometers), urgently needs to be upgraded and expanded to overcome its long standing deficit ridden situation. The railroads are mostly property of the state-owned company "Ferrocarriles del Estado." The government plans to auction to private firms the right to operate the company's passenger service.

Major ports are located on the Pacific Ocean, the principal one being Valparaiso, which is about 130 miles (210 kilometers) from Santiago. Others are Arica, Iquique, Antofagasta, San Antonio, Talcahuano, and Punta Arenas. Foreign and local shipping lines cover the international traffic, whereas the coastal traffic is handled by several local companies, one of which is state-owned. Recognizing that the port facilities need some

modernizations for the growing and changing nature of Chile's trade, the government plans to award service and management concessions for the ports.

Telecommunications are excellent, and Chile has one of the best networks in the hemisphere. Cable, fax and telephone and internet service rival those found anywhere in the world. The phone system is completely digital. There are eight international long distance carriers and three cellular telephone networks. Privately owned telephone companies have substantially increased the number of telephones and decreased the wait for phone installation. Several Internet service providers supply the ever growing demand that has positioned Chile as one of the Latin American markets with the fastest growth rate.

The government's main spending priority will be education. Economic policy officials hope, probably optimistically, that spending will rise by less than the rate of economic growth in order to continue tightening economic policy and reducing inflation. Higher spending on education will mean sacrifices elsewhere, which have not yet been determined. Additional spending cuts will be difficult, if not impossible, to find.

Major Political issues affecting the business climate Chilean politics is marked by broad consensus among the major parties about the importance of a free market economic system. Key differences between the governing center left coalition and the center right opposition involve strategies for, and the role of government in, addressing issues such as poverty eradication, health care, infrastructure and education.

Chile has become a model free-market economy. Chile supports the trade liberalization measures multilateral organizations agreed on. The strong comparative advantage of exports in timber, agriculture, fish meal, and mining, combined with the overall health of the economy, make Chile an attractive investment site.

The success of export-led growth has persuaded all political actors that the country's future economic health is closely tied to vigorous trade promotion. Consequently, it seems that the economic growth of Chile will continue over the next years.

E. CONCLUSION

Chile has become over the last fourteen years a model for a free market economy with a predictably healthy results in the next few years. The privatization process over the last twenty years of many state corporations and state services could also affect the defense industry. However, nothing has been announced and there is uncertainty in this area that will continue until the publication of the explicit Chilean Defense Policy.

The aspirations of some South American countries to enter the International Defense Industry market has not been realized. Opportunities to achieve this goal seem to be even further from reality. The disappearance of the Iraqi market and other markets in the Middle East reduced exports in many industries related to the defense in South America.

The Gulf War signaled the end of an era. Highly developed countries have strengthened even monopolized defense technology. The technology proven during the Gulf War, essential to modern defense, is not being transferred to third world countries. This means that the technology gap between the northern and southern hemisphere will become even greater. Thus, it appears that the defense market niche for the South American countries is in low cost, easy to operate, and relatively low technology products. The defense industry is a high risk business with a market that varies by region and has a cyclical behavior based on international tension. The South American Defense Industries have been shown to have several technical and economical difficulties, and at the present time, the industry maintains a low presence in the international defense market.

Compared to the Defense Industry in Europe, which integrates projects and cooperative programs, the Defense Industry in South America has followed a different path. Although it is in a crisis, its solutions have taken individual forms and are unique to each country. This is because there is no South America Community that represents the interests of the region equivalent to the EC. Although some economical agreements exist in the region, these do not have sufficient strength or reach. It does not seem that some defense industry agreements could prosper because of the small size of the regional market, and high barrier to overcome to compete in the worldwide defense market.

The low rate of arms transfer from Chile compared to Argentina and Brazil, may guide the Chilean Government in maintaining a higher defense readiness instead of following the world trend of defense budget downsizing.

VIII. ASMAR RESPONSE

A. BACKGROUND

This chapter will look at the response of the Chilean Navy Shipyard, ASMAR, under the five different strategic models of management defined in Chapter II. It can be concluded that the South American shipyard industry has followed different paths compared to those of the North Hemisphere shipyard industry. The realities of the South American shipyard industry are totally different, and any attempt to apply similar responses like the ones of the North Hemisphere, will most probably lead to an error. This is because the South American region has an entirely different political, economical, cultural, and social approaches to problems.

B. STRATEGIC MANAGEMENT MODEL OPTIONS

The management models indicated in Chapter II will be applied to the ASMAR Company. A description of implementation is presented in Section C with an analysis of its affect on ASMAR and the Navy.

1. Government Owned and Managed

Under the Government Owned and Managed Model, the Navy does not participate in the management of the shipyard. The management staff at all levels is by civilian personnel. The government has the entire responsibility for the shipyard and the resources to operate it.

2. Navy Owned and Managed

In the Navy Owned and Managed Model all the ASMAR assets belongs to the Navy. The resources to operate are in the Navy budget. In this model, the shipyard is converted to the status of an Arsenal. Consequently, the legal entity of a shipyard company disappears.

3. Privately Owned and Managed

The Privately Owned and Managed Model derives from the privatization process. All assets and debts are the responsibility of the new owner. Consequently, the Navy does not manage activities and navy personnel are not involved in shipyard operations.

4. Government Owned, Contractor Operated

Under the Government Owned, Contractor Operated Model the government continues as the owner of the shipyard assets, but the shipyard is managed under a contract with a private entity.

5. Government Owned, Navy Managed

The Government Owned, Navy Managed Model is the current management model used by ASMAR under the law resulting in the company's creation.

C. EFFECT OF APPLYING THE DIFFERENT MANAGEMENT MODELS

The analysis developed below will be based on the current management model of ASMAR, the Government Owned and Navy Managed Model. Using this as starting point, other models also will be analyzed.

From a defense industry business point of view, it is difficult to establish what arrangement is better for expediting a lasting and strong industry. This may be done with an alliance between government or private companies or some other combination. However, in general, all defense business must have a government authorization as part of the protection of the national interest and to carry out the government's international agreements or obligations.

1. Government Owned and Managed

This model involves the removal of the Navy as the manager of the shipyard. This would also be the end of specialized technical support of navy personnel who are assigned to the three plants of the shipyard. It may be possible to replace technical support in areas such as mechanics, electricity with those available in the normal repair workshop, however, specialized technicians in weapons systems, are not available in the Chilean market.

Weapons personnel are educated and instructed by the Chilean Navy. The Navy is also the only source of these skills in Chile. The lack of such technicians is the consequence of the fact that the defense market is extremely small within the country. Additionally, the defense industry of Chile is almost totally a function of the Armed Services.

The labor market for skilled people with experience in shipyards is also depressed because the country has ceased to be a focal point of significant maritime activities. This is a result of the opening of the Panama Canal. The shipyard industry in Chile is currently small and dependent on its domestic customers, the Navy, merchant and fishing vessels, and some business from foreign vessels in Chilean Ports.

The Government Owned and Managed strategic management model would also move away from the process of economic liberalization. This policy has been in effect by the Chilean government for more than fifteen years. The policy has been highly successful and is internationally recognized as a major economic success in South America. This economic liberalization means a decreasing role for the state in the economic activities and the introduction of market incentives. The result is a larger role for the private sector in decision making.

The operations norms under this model would remain unchanged. The Navy would pay only the cost of the work developed by the shipyard. The most probable effect is that the shipyard would lose the constant demand for efficiency generated by the Navy. This demand for efficiency operation is from the Board of Director in particular, whose members are the Directors of all the Technical Headquarters. This demand for efficiency is generated by the Directors of Headquarters whose budget is being reduced as related to the requirements. One action to satisfy these requirements is to demand more efficiency operation of ASMAR. This results in more work with a smaller budget and better final net income for the shipyard. From this net income, up to 30% return to the Navy for use in repair activities.

As a state company, ASMAR will tend to focus its goals on profitable work in the remaining Chilean maritime activities. This will remove the Navy from a primary place in the shipyard and it will lose the objective for the existence of ASMAR.

2. Navy Owned and Managed

As shown in Chapter II in the Navy Owned and Managed Model, the assets of the shipyard belong to the Navy. The budget for the shipyard is dependent on the resources that the Navy assigns. In some sense, these resources will be converted as competition for resources increases, along with other Navy requirements. This may reduce the development capability of the shipyard.

Although the government should increase the budget for the Navy at the same time that the model is applied, the shipyard may face the risk of becoming inefficient because of the lack of independent resources for new investment and modernization. This, in the final analysis, would result in a loss of readiness in the Navy and the fleet.

The increase of budget for the Navy because of the change in shipyard management model would also represent a new defense financial load. Additionally, this new budget would represent a retreat in government policy. This is because ASMAR was created from the former Navy Arsenal as a way to offer and develop better services to the Chilean Navy and the national and international maritime community.

The return of ASMAR to an Arsenal status will not only affect the Navy in the long run, but the maritime industry of Chile. ASMAR currently is the only shipyard in Chile with dry-dock capacities that could maintain the Chilean merchant fleet. The only source for the 3,550 ton capacity in floating docks is ASMAR. Although this floating dry-dock could be replaced by a private shipyard, it would require a huge investment. But it is financially improbable that new dry-docks projects would be attempted. This means that the merchant fleet would lose its home repair yard, resulting in a degradation of the maritime power of the country and represent a loss in maritime national interest. ASMAR as a company would literally disappear and lose its efforts and investments in marketing, sales and the prestige developed over years.

The consistent reduction in workload caused by eliminating the work for third parties under this management model, would result in a significant reduction in the labor force of the shipyard. This reduction in workforce would also affect the occupancy level in the region where the shipyard industrial plants are located. This would cause social problems for the governments involved. As a result, the economy of the region would suffer because many small and medium companies would lose work as the subcontractors for the shipyard. These jobs represent the most important source of income for many areas.

3. Privately Owned and Managed

In general, a privatization process normally comes as the result of two issues. One is inefficient management and economic losses at the end of successive periods requiring high investment to reverse the results. The second issue is when the company requires the enlargement and the infusion of new capital that the government cannot supply but the private sector can.

But what does the Privately Owned and Managed Model mean to ASMAR? First, ASMAR does not need new capital for investment or future development. This is because the shipyard has shown itself to be economically viable and has satisfied all the Navy requirements for installations, technology, and human resources, etc. The shipyard has anticipated future requirements as well. Second, the management efficiency of ASMAR has shown a positive slope with good results. The shipyard has never represented a financial load for the government, or the Navy. Consequently, the lack of efficiency of ASMAR is not a justification for a privatization. On the contrary, the recent modernization process places ASMAR as one of the most efficient shipyards in South America. The yard is also ISO certified [Ref. 37, p. 51]. This leaves ASMAR in a very good competitive position inside the country and internationally. For instance, ASMAR and HDW, a German company, and one of the most famous and prestigious submarine builders in the world, have signed an agreement where HDW designates ASMAR's Talcahuano shipyard as the official refit, maintenance and upgrade facility for all German designed and built submarines in Latin America [Ref. 38, p. 59].

From a private operator's point of view a shipyard must maintain equipment and investment only on assets that will give good returns. This means that assets like special workshops for Navy use, hydraulic, periscopes and weapons systems will experience deterioration over time, for a lack of investments and modernization.

Although, a Privately Owned and Managed Model will represent a huge increase in the repair budget for the Navy, eventually the budget could be increased by government. An increased cost results as the less profitable workshops stay on the Navy side and the Navy develops "Arsenal" departments to provide these services. ASMAR was created from the Navy Arsenal Base as a way to satisfy, in a better form, the Navy requirements, but also to contribute to the maritime activities of the country.

This model also would represent a weakness for the Chilean Navy. The Navy would be dependent on a private monopolies for the capacities on dry-docks and the floating docks that are unique to the country. Additionally, from a human resource point of view, this model represents a significant impact to the region where the shipyard is located. The reduction in overall activities at the shipyard reduces the labor force and occupancy level.

Although the decision of privatization by the government does not have a rational technical justification, the decision makers could find justification through power and politics, where the actors may take resolutions not necessarily based on rational considerations. In fact these decisions could be based on external, international or political pressures.

4. Government Owned, Contractor Operated

This management model is based on government ownership and private contractor operations or management of the shipyards. This model was implemented by the British Navy Shipyards as the first step before full privatization. The decision to privatize the British shipyards was already taken before establishing this management model at the yards. The reasons for the British privatization of their shipyards and the support of the defense industry to the fleet was described in Chapter IV. However, as is indicated in the Report by the Comptroller and Auditor General in London, "...none of the Navies

consulted have appointed commercial managers to run their publicly-owned dockyards exactly like the United Kingdom's 'Government Owned Contractor Operated' Dockyards." [Ref. 14, p. 33]

In the case of ASMAR, the argument against private management developed in the previous section is also valid for this management model, with the exception that there are no private operators with new capital, and the change of management is only justified if there is an inefficient management process. This is not the case for ASMAR.

This management arrangement also means that the new investments and modernization of the shipyard must come from the owner side. But in the case of ASMAR, the shipyard owner does not have the incentive because the owner acts only as a landlord and the landlord will lose sensitivity of the shipyard business in time. On the other hand, the shipyard operator has an obligation and the incentives to manage efficiently and realize a profit. The operator has only the responsibility under contract to attend to navy ships.

5. Government Owned, Navy Managed

The Government Owned, Navy Managed Model is the current management model used by ASMAR. Under this model, the government owns the assets of the company and the Navy manages the yard under an established law. This was covered in detail in Chapter VI.

The current success of ASMAR is based on the continuous effort to develop and improve the shipyard. The distinguished position gained by ASMAR, which is recognized by the international community, has also contributed to the high technological readiness of Chilean Naval ships. The close and clear relationship between the two organizations, the Navy and ASMAR, is guided by the agreement "Acuerdo Armada-ASMAR." This agreement establishes all the Navy needs for the shipyard, except new construction which is provided for by separately enforced contracts.

The success of this model is also dependent on the future Defense Policy of the Chilean Government. Changes in support may introduce some constraints to the current Navy shipyard market. Changes, such as Chilean Navy requirement; or market factors, not

only in the maritime sector, but in Chile's industrial market, may effect the shipyard success. The last factor, and the least probable, is an act against the subsidiary principle of the Chilean State.⁵

Using the same model should permit the shipyard to continue with the same positive trend of efficiency and growth. However, a major threat could be introduced if a policy is imposed on the shipyard to work only on the Chilean Naval ships. The situation would be very similar to the Navy Owned and Managed Model, with the exception that the shipyard would continue as a company. In this situation the Navy would have to carry the increase of the shipyard prices because all the fixed costs of the yard that are normally shared among all the customers would be solely the responsibility of the Navy. Consequently, the government would have to increase the Navy operational budget to compensate.

The country would have unique assets, with a very low utilization rate, like the dry-docks and floating dock. This goes against any known business or economic criteria. Additionally, the Chilean merchant fleet and some large fishing vessels would be forced to use foreign shipyards for their maintenance. This works against the maritime national interest of the country, and makes it more dependent on foreign resources. Likewise, ASMAR would lose the possibility of work for foreign navies, in repair works as well as any new ship building.

D. CONCLUSION

The future management model can be known only after the publication of the Defense Policy by the Chilean Government or some other government statement. This study indicates however, that the most adequate management model is the current one. If the model selected does not conflict with the government's technical and economic interests,

5 The subsidiary principle of the Chilean State establishes that state organizations could develop business activities only to the exact extent that is established by law for a particular entity and the organization may not develop activities that could be developed in a normal way by a private company. To summarize the state organization should develop activities that private organizations could not adequately perform.

then the government should consider a management model that serves the needs of the three main actors with interest in the shipyard: the government, the Navy, and the company itself.

The first management model analyzed, the Government Owned and Managed, does not show any advantage over the current model. On the contrary, the government will take more responsibility and probably carry a greater financial load. Additionally, in some sense, the government will need to centralize and take more control over the state companies. This is the opposite of the current government policy of decentralization and the transfer of former state companies to the private sector.

The Navy Owned and Managed Model would be a backward step for the shipyard because it would become an Arsenal. ASMAR was created to avoid this problem. This alternative of management also would represent the disappearance of the ASMAR as a shipyard company.

The third model, Privately Owned and Managed, does not have any rational justification, because it will not improve the efficiency of the company. This model would not increase the services to the Navy or the maritime market. ASMAR does not need significant amounts of capital to grow. Consequently the entity that would suffer the most negative effect of private ownership would be the Navy. This represents a loss in readiness for the Navy and a loss of the maritime power and interests for the nation. The conditions for privatization of the Chilean Naval Shipyards do not exist.

The Government Owned, Contractor Operated Managed Model is a unique model applied by the British Government as a preliminary step before full privatization of the Navy shipyards. The primary purpose of this model is to improve the management and efficiency of the shipyards, and also to adopt a transitory management model to get the Navy and the system to work with private shipyards in the future. However the real efficiency of the model has never been demonstrated. [Ref. 14, p. 5]

Nobody in the maritime industry and in the Chilean Ministry of Defense has any doubt of the efficiency of ASMAR. Its management has improved over the years. Consequently, it would not make sense to apply this model to ASMAR's case.

A significant fact which is common to the four management models is that all will represent an increase in the repair budget for the Chilean Navy, and consequently an increase in the Navy's Defense Budget. This fact is the opposite of current defense budget trends.

The decision to use the second, third or fourth management models would also have a significant impact on the social and economic aspect of the regions where the shipyards are located. This would, in different degrees, represent a reduction in the overall labor force of the shipyard and also a reduction in the use of subcontractors.

The management model most appropriate to the Chilean Navy shipyard is the Government Owned and Navy Managed Model. This would continue improvements in policy by the ASMAR Board of Directors. The shipyard also would grow in accordance with the state of art in the world shipyard industry and also meet the Navy's needs in maintaining and increasing its readiness. This would be considered as a strength, making Navy shipyard facilities dependable during peace or war. The Chilean Government can maintain and also develop its maritime national interest in the long run. These assets represent the greatest shipyard facilities along the South Pacific Coast.

Any action destined to reduce the government's current freedom of action and the law that authorizes ASMAR's operations acts against the growth and efficiency efforts developed up to the present time.

IX. CONCLUSIONS AND RECOMMENDATIONS

A. RESEARCH QUESTIONS

The basis of this study is the primary research question:

What is the most appropriate management model for the Chilean Navy shipyard in the future given the changing environment of the navy shipyard industry in the world?

From this study it is possible to conclude that each region has its own particular problems. Nevertheless, the shipyard industry worldwide is involved in the same shipyard crisis. The solution to this crisis requires action by respective governments. These governments are attempting to avoid unrecoverable damage to the maritime national interest represented by the loss of the shipyard industry and particularly by the Naval shipyards. The solutions are multiple actions such as: acting through cooperation or joint programs between shipyards; sharing part of the Navy workload with private shipyards; and changing the management model of the Navy or government shipyards. After analyzing the different models and the experiences of the United States Shipyard Industry, four European Shipyard industries, and five South American Shipyard industries the most appropriate management model to use in the future is to continue with the Government Owned, Navy Managed model. This is the conclusion derived from the analysis in Chapters VIII and is supported by the research in previous Chapters.

To answer the primary question it was necessary to address the following supporting questions:

What are Chile's shipyard capabilities at the present?

The primary and largest shipyard in Chile is ASMAR, which is also the pillar of the shipyard and maritime industry in the country. Secondary shipyards are established in the country with capacities that serve mainly medium size fishing vessels, with the exception of

SOCIBER which has capabilities of a floating dock up to 10,000 DWT. The Chilean shipyard capabilities were described in Chapter VI.

What are the present management models used in other Navy shipyards in the world?

The management models used in the Navy shipyards in this study are:

1. Government Owned and Managed
2. Navy Owned and Managed
3. Privately Owned and Managed
4. Government-Owned, Contractor-Operated (GOCO)
5. Government-Owned, Navy-Managed

These management models were defined and analyzed for different shipyard industries throughout the world in Chapter II, III, IV, V, and VI.

In the light of the management model used by some major Navy or Government Owned shipyards, could a change in the management model improve the management of the Chilean Navy shipyards?

According to the analysis developed in Chapter VIII, the most appropriate management model is the Government Owned, Navy Managed Model given the current defense norms for the country. Consequently, any change to the actual model will bring a diminished situation to the Chilean Navy shipyard. This also means that the shipyard should maintain the continuous improvement philosophy in order to meet all the Navy needs and to sustain growth.

However, one of the greatest threats to this model is that the new Defense Policy may reduce the market to only Navy requirements. This means that the Navy will absorb all the operating costs into the prices, with a subsequent increase in the maintenance budget for the Navy.

What may be the effects of a changes to the ASMAR management model in the Navy budget for maintenance, refits, conversion, and shipbuilding?

Any change in the ASMAR management model will be reflected in the Navy budget for maintenance, refits, conversion, and shipbuilding. However, having as a base the current management model of Government Owned, Navy Managed, the main effects of applying the second, third, and fourth model will be an increase in the shipyard work costs for the Navy. Additionally, this model will also have a significant social and economic impact in the region where the shipyard plant is located.

Although the first model could be applied under the same basic norms established in the current Law, the Navy will lose the direct pressure that it currently has to demand more efficiency from the shipyard. This action has contributed to the excellent behavior of the shipyard.

B. SUMMARY

At the end of the 1980s, there was an increasing concern being voiced about the general economic viability of the shipyard industry around the world, and also its adequacy to meet the mobilization requirements of the countries. An almost generalized Navy downsizing after the fall of the Iron Curtain added to a sustained negative slope in the defense budget of the countries. A lack of maintenance requirements in the maritime sector pushed the world shipyard industry into crisis.

The shipyard industry is a high value asset for any nation. It has the potential national security value given its capability to perform mobilization tasks, such as building, dry-docking, repair and modernization of the Navy Fleet and the merchant fleet.

As a nation's assets, the shipyard industry belong to the Maritime National Interest of a nation through Maritime Power. The Shipyard Industry is one of the components of Maritime Power. Consequently, the highest authority of a nation has the responsibility to act in favor of maritime interest, and of the shipyard industry in particular. Any government decision about its shipyard industry should be analyzed at the political-strategic level.

The management model applied to the shipyards belong to the realm of a strategic decision which will have deep affect in the shipyard industry. The common management model options for a shipyard are the following:

1. Government Owned and Managed
2. Navy Owned and Managed
3. Privately Owned and Managed
4. Government-Owned, Contractor-Operated (GOCO)
5. Government-Owned, Navy-Managed

The analysis of this study starts with the United States of America. History indicates that Naval and private shipyards have jointly satisfied the U.S. Navy requirements. The U.S. Shipyard Industry started to have problems when the domestic maritime industry collapsed. Therefore, the private shipyards have to come to depend on the U.S. Navy. The shipyard industry reduced its capabilities during the last fourteen years with the closing of around 50 shipyards in the U.S. This crisis has also affected the Navy Shipyards remaining; today only four yards from a total of eleven remain. The Navy workload is shared with the private sector as a way to reduce the shipyard industry crisis. Significant defense budget cuts, along with the reduction of a Navy active fleet size of 34 percent, contribute to the crisis. This also means that currently only an average of 5.7 ships per year are built compared to the average of 19 ships in the 1980's.

Although the U.S. shipyard industry has been successful since 1789, the U.S. government issued laws to protect the shipbuilding and ship repair industry. This indicates the high value that the shipyard industry represents for the U.S. national interests.

The Department of Defense Appropriation Act of 1963 establishes that at least 35 percent of all the repairs, alterations, and conversions of Navy ships should be developed by privately owned shipyards. It is also established that all the new construction should be developed by private yards. The management model applied in all Navy shipyards is based

on the Navy Owned and Managed Model, where the shipyard belongs to the organizational structure of the Navy.

The situation in Europe is not much different than in other parts of the world. The Western European shipbuilding industry ceded its domination of the market in the late 1960s, first to Japan and then to other newly industrialized countries like South Korea and more recently to China. The fall of the Soviet Union, which established a new world order, opened the shipyard market behind the Iron Curtain. The dramatical reduction in defense spending and the consequent reduced demand for shipyards, placed the private and Navy shipyards into survival conditions.

For the United Kingdom there is an additional factor. Political parties made strategic decisions about the shipyards. The management status moved from a total nationalized or centralized structure, to a total privatization of the shipyards. With the reduction in the British defense spending, the government decision began with a Navy Owned and Managed Model and moved to a Government Owned, Contractor Operated (GOCO). This was done in two of the three Navy shipyards, Devonport and Rosyth, as a way to increase the operational efficiency of the shipyards. This arrangement applied from 1987 to 1997. Although, management followed this model, it was not without problems, and both shipyards were privatized in 1997. The only organization that remains under British Naval operation -- Portsmouth Dockyard -- is currently in the bidding process. With this last change, the British Navy will do almost all its maintenance, refit, and repair activities under the private sector. In this research of common management models used in the shipyard industry, Great Britain was the only country that has applied the GOCO model.

Another actor in the European Shipyard Community is Germany. This country dominated the shipyard industry in the region, mainly in new construction. The fact that this domination has ended is a concern for the German government. The government has taken some actions to reduce the negative trends in the German Shipyard industry. In addition to cost savings and investments in technology to increase in efficiency, the Germans are looking to cooperation programs in the European community.

The German Navy does not have its own shipyard, however they have some specialized work under an Arsenal organization. In the Arsenal, it applies the Navy Owned and Managed Model. Although the German Navy uses private shipyards for the maintenance of its ships, these shipyards work under the supervision of the Navy Arsenals. Weapon System work is only done in Navy workshops.

On the other hand, the French Defense Industry is in hard times. The French Government, has privatized, such as the merger in the aerospace industry between Aerospatiale and Dassault Aviator. This may be the first step of a larger process, although government officials deny any national consolidation intention. France is aware of the steps that other European countries like Italy, Germany and Great Britain are making in the defense industry.

Nothing has been announced about the French Government shipyards "Direction des Constructions Navales" - DCN, but they are not exempt from the world shipyard industry crisis and have shown poor financial performance. The four shipyard plants which are integrated in the DCN are specialized for some types of ships. Most new shipbuilding programs are developed with a certain degree of cooperation among the shipyards. The French shipyard industry is planning an aggressive marketing plan as a way to increase the activity in its yards.

The fourth defense industry analyzed in this study was Spain. This industry is passing through one of its hardest times with a very low activity. A national privatization plan has begun to move into the defense industry and some other publicly-owned companies. However, nothing was announced for the BAZAN shipyards, which is also having survival problems like other European and Spanish shipyards. Many of them have already closed due to the crisis. The management model applied to BAZAN is the Government Owned and Managed Model. INI (Instituto Nacional de la Industria), the National Institute of the Industry is responsible for the three shipyard plants. BAZAN is currently in the running for new contracts as the only way to continue in business.

In general, the European defense Industry, and in particular the shipyard industry, are facing difficult times. One of the solutions being applied is to develop a cooperation program between the community both for, regional and international contracts. European governments are very concerned about this situation because, without exception, they know the high value that this industry represents for the interests of their nations and regional security.

In the Southern Hemisphere, the shipyard industry does not have a better horizon. The Argentine Maritime Industry has faced financial difficulties over the last years; privatization has been the most radical change. The shipyard sector has suffered from the reduction of the merchant fleet, budget cuts for the Navy, reduction in the repair load, and the disappearance of new construction. However, the Argentine Maritime Industry reacted positively to government actions at the end of 1995. Two large private shipyards survive, TANDANOR and SANYM SA., and some small repair companies have responded well to the economic reactivation of the Argentine Nation. The government owned shipyard, AFNE, stopped its activities and its assets were transferred to the Government of the Province of Buenos Aires and renamed Astillero Rio Santiago (ARS). This yard is still struggling to survive.

The Argentine ship repair activities are made in Arsenals with some of their own docking facilities and specialized workshops following the Navy Owned and Managed Model. In the reactivation measurements implemented by the government for the shipyard sector, nothing has been announced about a change in the management status of the Navy Arsenal. The Argentine Navy normally contracts with foreign private shipyards for new ship construction.

The Brazilian Maritime Industry also faces significant problems. Moreover this industry have a primary role in the activities of the entire country. The shipyards became noncompetitive because of the country's economic situation and the government withdrew subsidies to the yards. This forced the shipyards and ships' owners to work in the real world

of the maritime industry. Only five large shipyards survived the crisis, but the situation is still unstable.

The Brazilian Navy uses the Arsenal organization for maintenance of their ship under a Navy Owned and Managed Model. The development of the yards depends on the Navy and competes with all the other Navy needs. Despite the measurements taken by the Brazilian government to enhance its maritime industry, nothing was announced about a change in the management status of the Navy Arsenals.

For Colombia, the maritime industry shows several weaknesses and a very low level of activities in this sector. This places the country in critical conditions from the perspective of Maritime National Interests. The only shipyard, CONASTIL, with capabilities to maintain Colombia's merchant and Navy fleet, is closed. This is the result of bad financial conditions. This shipyard was managed from 1969 to 1992 using the Government Owned and Managed Model. This is because the majority of the investment capital was from government institutions. At the end of that time a private company bought 80% of the stock of the shipyard with remaining participation by the Navy. However, this action was not enough to save the shipyard. Within two years the yard was closed with a high level of debts. This situation leaves the country, and particularly the Colombian Navy, in a very sensitive situation. It leaves the Navy with a dependence on foreign shipyards for the maintenance of its ships.

Another country this study considers is Peru. Its maritime industry currently is in sustained improvement. Peru has lost most of its merchant fleet, which is flying other flags, but its main shipyard SIMA has been maintained throughout a bad period. The management model applied in this shipyard is the Government Owned, Navy Managed model. The responsibility for the yard is the Peruvian Navy. Although the government has begun privatization initiatives in the maritime industry, nothing has been announced for the SIMA shipyard. This yard is the primary yard and almost the only one with capabilities to service the Peruvian Navy and merchant fleet.

The last country studied in this research is Venezuela, which has not developed its maritime industry to any great extent, leaving the task to foreign investors. Those interest which are the states are considered by the maritime operator as inefficient. The Venezuelan government has announced a privatization program for the maritime industry. The government's primary shipyard DIANCA has a high priority in this privatization program along with a change of management model. Currently the shipyard is under a Government Owned, Navy Managed Model. The shipyard has experienced several difficulties in its operation due to the lack of maintenance and modernization, but the government is developing an effort to maintain the modernization of the shipyard in order to support this asset as part of the national interests of Venezuela.

In general, the maritime interests in South America are experiencing a significant crisis with an uncertain future. This issue reflects the lack of a concern in the governments over the maritime national interest which directly affects the maritime power of the respective nation.

The Chilean shipyard industry has its strength through ASMAR. ASMAR is the largest shipyard in the country with unique capabilities to repair, maintain and modernize all types of navy ships, merchant and fishing vessels. ASMAR has two dry-docks, the only in Chile, where the largest has a capacity up to 96,000 DWT, four floating docks, and more than 1,700 mts of berth. ASMAR offers the largest slipway for new construction in the country with a capacity up to 50,000 DWT.

Other shipyard capabilities in Chile are offered by other smaller shipyards with capacities to repair and to build small fishing vessels up to 1,400 tons. These shipyards are the ASENNAV and MARCO CHILE. The third relative importance shipyard in Chile is SOCIBER with a floating dock capacity up to 10,000 DWT. This company is a joint venture between ASMAR and BAZAN of Spain.

With the capabilities indicated above, almost all the merchant and large fishing vessels and Navy ships have no other possibility for a dry-dock and repairs than in ASMAR. In case of warships, some needs cannot be found in the private sector, such as the

repair of sophisticated combatants like missiles, vessels, or submarines. The management model used in ASMAR is the Government Owned, Navy Managed model, success of which has come from continuous improvement. This has guided the organization to create a competitive advantage in the word shipyard market, and by following a solid strategic direction set by long-term strategic plans.

The relationship between ASMAR and the Chilean Navy is guided by an agreement which covers all the needs of the Navy and also establishes the benefits and responsibilities for both sides. This set of norms has created a great success for the Navy shipyard and the Chilean Navy. The Navy has continued a modernization program which contributes to maintaining a high degree of readiness. Consequently, the management model has contributed to maintaining and sustaining positive growth for both sides -- the ASMAR shipyard and the Chilean Navy.

Finally, the defense industry in South America, represented by Argentina, Brazil, and Chile, has made great efforts to compete in the world defense market, but unfortunately with almost no positive results. All the countries have had some good business mainly in Middle East. But these contracts were stopped with the Gulf War. The South American Defense Industry also has experienced high barriers structured by the developed countries. This makes the competition even harder and increases the technological gap. At the present, the South American Defense Industry is making great efforts to survive, but given its current condition, it exhibits little strength in the world defense market.

In particular, the Chilean Defense Industry is represented by one private company and by industries which serve the defense needs of each service. ASMAR serves the Chilean Navy. It has had the most successful results of these companies despite the difficulties that the shipyard industry has experienced around the world.

At present, the Chilean State does not have an explicit Defense Policy. This is a task that was announced as one of its goals. From the management model analyzed, the most appropriate model that would contribute to the continuous improvement of ASMAR

is the Government Owned, Navy Managed model. However, any increase in the constraints established by the Law N° 321 will act against the positive slope of efficiency and growth.

The application of the Privately Owned and Managed Model in the shipyard would have negative affects and would generate weaknesses for the Chilean Navy. Privatization currently is not sustained by any technical - rational justification.

The greatest threat for the ASMAR shipyard is any constraint that imposes work only on Navy ships. This would create a substantial increase in the price levels of the Navy work and introduce inefficiency in the use of some assets that are unique in the country, such as the dry-docks and floating dock. It would also result in a loss of the home shipyard for the merchant fleet, a reduction in the labor force of the shipyard, and result in a negative effect in the occupancy level of the region. There would be a return for the shipyard and for the Chilean Navy to its former Arsenal status. Finally, in the light of major navy shipyards and looking the experience left by South American navy shipyards developments and trends, the management model most appropriate for continuing the growing trend and serving the Chilean Navy needs is the Government Owned, Navy Managed Model.

C. RECOMMENDATIONS

- The Government Owned, Navy Managed Model is the most appropriate management model to continue the management of the Chilean Navy shipyard, the ASMAR- Shipbuilding and Docking Company.

This research indicates that with the current defense norms there is no rational and technical justification to change the current management model. Moreover, the shipyard has served as one of the important parts of the logistic chain of the Navy. It has satisfied all their needs and has gained prestige in the international shipyard community with good operational results and a sustained growth in all its function.

- The Chilean Navy should make an effort at the highest levels of the Government to avoid any new Defense Policy that introduces more constraints to the

operation of the shipyard. This could cause negative effect on the Shipyard and on the services that the Chilean Navy requires from ASMAR.

Additionally, any action directed to diminish the operational field of ASMAR will affect directly the maritime national interest and also, by inference, the reduction of the Maritime Power of the Chilean Nation.

- It would be highly advantageous to maintain the continuous improvement as a way to gain a competitive advantage in the national, regional and international shipyard industry market. It is also necessary to guide the shipyard effort toward the repair activities of merchant, fishing and foreign navies, which are the most profitable path of all.
- The current strategic plan of the ASMAR shipyards should enhance the developing effort to establish alliances with other shipyards. This would use foreign shipyards as a way to complement the ASMAR activities and empower the shipyard in a highly competitive and depressed market.

D. SUGGESTION FOR FURTHER RESEARCH

1. Analyze the financial effects of the different management models identified in the this study and apply this analyses to the Shipbuilding and Docking Company-ASMAR.
2. In the light of the new Defense Policy in Chile, analyze the management, organizational, and economic effects for ASMAR.
3. Analyze the possible effects of Joint Defense Projects between the Chilean Armed Services as a way to strengthen and exploit the scarcity of the Chilean Defense Industry resources in light of the restricted international defense market.

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